Southern Power & In[illegible]try

The Industrial and Power Journal of the Soutl[illegible]thwest

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SEPTEMBER, 1957

SPI . . . 54th Year

REACHES industrial plants (manufacturing, process, utility and large service) in the South & Southwest.

SERVES plant managers, superintendents, engineering department heads and plant operating staffs.

PROVIDES information to solve design, installation, operating and plant maintenance problems.

Complete Contents.....3

SPI

FIFTY CENTS PER COPY

JOB COMMUNICATIONS help this welder talk and write about his company and job. He is a good worker, makes money for his company and earns a good pay check. Pages 40-42 show how a job communications program can be set in motion.

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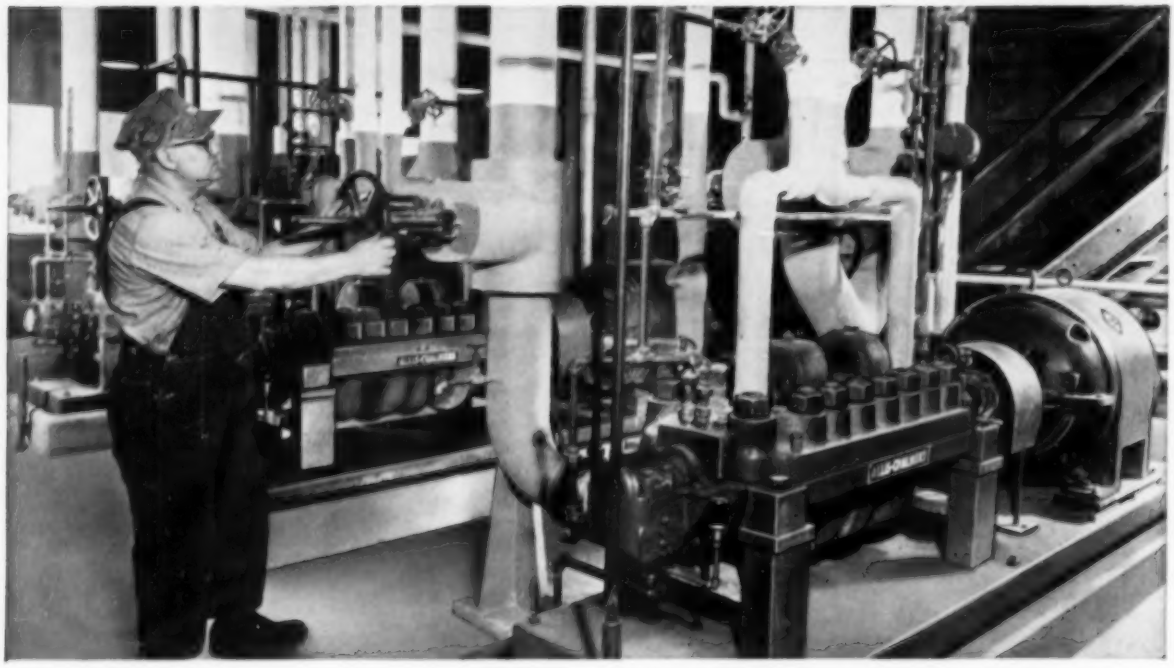
Allis-Chalmers Pumps Meet Power Plant Requirements



New Pumps Give Milwaukee County Institutions

. . . Dependable Power Service

THESE modern multi-stage high pressure pumps assure continuous, economical steam for the Allis-Chalmers 3000-kw steam turbine units at the Milwaukee County Institutions.

As new members of the Allis-Chalmers complete line of pumps, these units are designed to meet medium-high pressure, continuous service requirements of boiler feed duty in lower volume ratings.

Horizontally split casing with suction and discharge in lower half provide for simplified maintenance—without disturbing piping. Both radial and axial balance maintains close clearances and fits, gives low thrust bearing loads. Bearings are double-row ball bearings or alternate sleeve bearing with Kingsbury thrust. Sleeve and Kingsbury combinations have ring oiling as well as pressure lubrication.

You get **MORE** than a Pump . . . When You Specify Allis-Chalmers

You can take advantage of Allis-Chalmers wide experience in supplying pumps to all industries. You are assured of modern design, heavy duty construction and correct application aid — all adding up to years of dependable service.

Allis-Chalmers is the only company that can offer you "One-Source" responsibility, with a complete unit — pump, motor and control — all built to work together. For "MORE" information about Allis-Chalmers pumps, call your local A-C office, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

A-5098

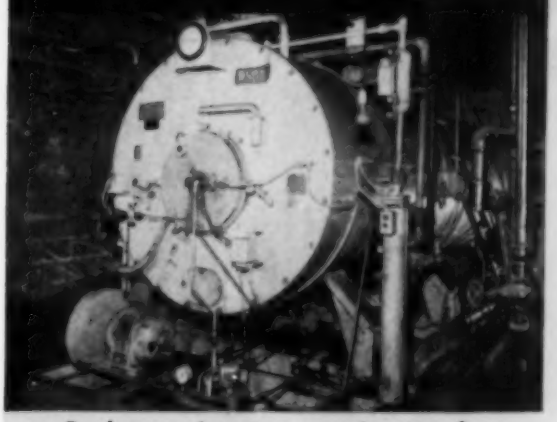
SOUTHERN POWER & INDUSTRY is published monthly by W. R. C. Smith Publishing Co., Executive and Editorial Offices: 806 Peachtree St., N.E., Atlanta 8, Ga. Entered as second-class matter at the Post Office, Charlotte, N. C. Subscription Rates: United States and Possessions, $1.50 per year or three years for $3.00; Foreign Countries, $10.00 per year.

Volume 75 Number 9

STEAM GENERATING PROBLEMS SOLVED

. . . a report

by AMESTEAM GENERATOR

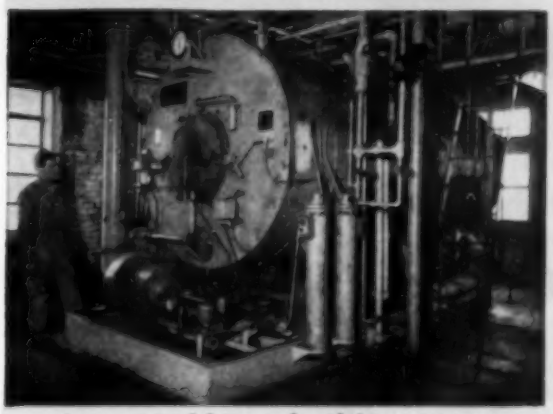


Food processing steam requirements from lowest demand days to full capacity easily handled by this AMESTEAM GENERATOR.

". . . most economical and trouble-free unit we have owned in our thirty years", writes J. J. Giammalvo about his AMESTEAM GENERATOR.

". . . the boiler operates with a minimum of maintenance beyond opening and cleaning for annual inspection. It easily handles our steam requirements from the lowest demand days to full rating when our dryers and condensers are being used to capacity, operating faithfully, week after week, burning No. 6 fuel oil.

"This boiler, installed on January 5, 1951, has been by far the most economical and trouble-free unit we have owned in the thirty years we have been engaged in the manufacture of cheese and other dairy products . . ."

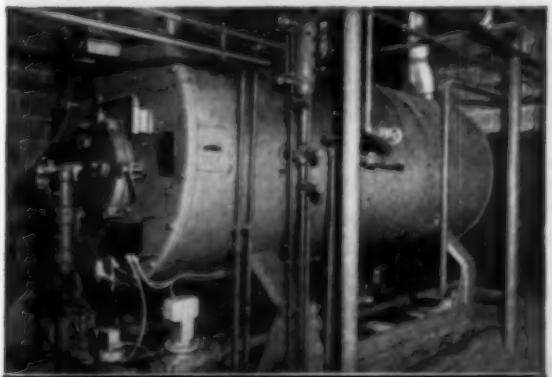


Space problem solved by compact AMESTEAM GENERATORS dependably serving large Pure Food Factory.

Food plant appreciates space savings, performance and service.

"Up to the time we purchased your AMESTEAM GENERATORS, we were users of coal", writes Erwin C. Meyer of "HANSA" Pure Food Factory, Mamaroneck, N. Y. "We needed new boilers, so the writer studied different makes of steam generators and finally decided on your generator because it was so compact and complete.

". . . the new AMESTEAM GENERATORS are in their new boiler house and we are well pleased with their performance. We require very little service from you. The service you rendered was prompt and very cordial. It was a pleasure and it is a pleasure to do business with your firm."



Space-saving, efficient AMESTEAM GENERATOR delivering dependable steam for Gates Rubber Company.

At Gates Rubber Company—"very reliable and entirely satisfactory".

Robert L. Hall of Gates Rubber Company Sales Division, Inc., reports on the AMESTEAM GENERATOR in the firm's Sioux City, Iowa plant:

"We have found this equipment to be very reliable and entirely satisfactory in our application. The boiler has carried the maximum load that we have required of it and we have absolutely no mechanical or electrical difficulties since its installation" (May, 1956).

". . . we had occasion recently to inspect the boiler internally, and it was found to be in excellent condition in every respect".

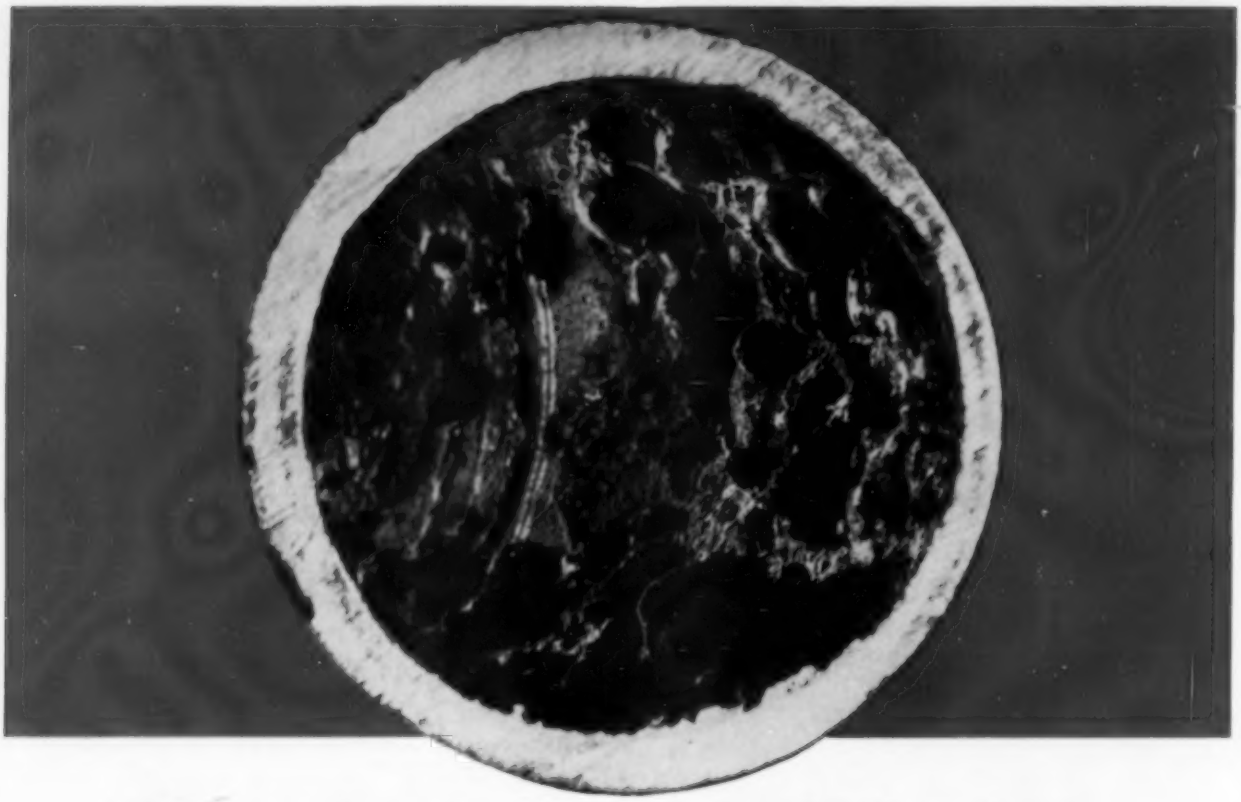
WHAT'S YOUR STEAM PROBLEM?

If you need 10 to 600 HP and want the kind of space-saving, trouble-free service enjoyed by these owners of AMESTEAM GENERATORS, write today for our catalog and the name of your nearby AMESTEAM dealer.

AMES IRON WORKS INC.

BOX L-97 OSWEGO, N. Y.

For more information, use Reply Card—Page 95



Ever look a corroded pipe in the eye?

If you have, you probably thought the pipe was squinting because is was partially closed. Rust, corrosion and scale can ultimately reduce the capacity of pipes to a point of complete breakdown of your system. Of more immediate concern, rust and scale, acting as insulators, will reduce heat transfer to a minimum in your refrigeration and air conditioning systems. Efficiency is lowered, operating cost rises.

ANCO SCALE REMOVER readily attacks tough deposits of rust and scale converting them to forms which are easily rinsed away. **ANCO** SCALE REMOVER — an efficient dry formula based on DuPont Sulfamic Acid — can be added directly to the operating system. In a few hours the removal of rust and scale has been accomplished and the pipes of your system are clean.

A clean system deserves the best in preventive maintenance. Maintain top operating efficiency by the regular use of **ANCO** COOLEX, a maintenance product for the prevention of rust, corrosion and scale.

Use **ANCO** ALGAECIDE in convenient briquette form for the removal and prevention of slime and algae in refrigeration and air conditioning systems.

Let an Anderson service representative recommend the type of water treatment program best suited to your requirements. There is no obligation. Write for full details.

SPECIALISTS IN MAKING WATER BEHAVE

Anderson Chemical Company, INC.

Box 1424 · MACON, GEORGIA · Phone 5-0466

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NBP

Southern Power & Industry

The Industrial and Power Journal of the South and Southwest

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Editorial and Executive Offices: **SOUTHERN POWER & INDUSTRY, 806 PEACHTREE ST., N. E. ATLANTA 8, GA.**

Facts and Trends

September 3, 1957

◆ EVAPORATION LOSS can be acute. In some arid regions there is an evaporation loss of ten vertical feet a year.

The chemical hexadecanol(commonly used as a cosmetic base) shows promise in solving the problem. The Southwest Research Institute, during the past two years, has experimented with a thin film spread over the surface of a reservoir. In some instances, the hexadecanol has reduced loss as much as 45%. Studies are now underway on a 25 acre lake. Problems requiring further work are bacterial destruction of the film, wind damage, and a means of spreading the material.

◆ BOILER CONTROL—On-the-job report on how Copes-Vulcan helps make more power for Carolina Power and Light Company is featured in their Bulletin 1032. Design and operating highlights (Louis V. Sutton plant) include: combustion, feedwater, boiler feed pump recirculation controls plus automatic sequential soot-blowing. For your free copy write Copes-Vulcan Div., Erie 4, Penna., or circle No. 256 on SPI's Reader Service Card.

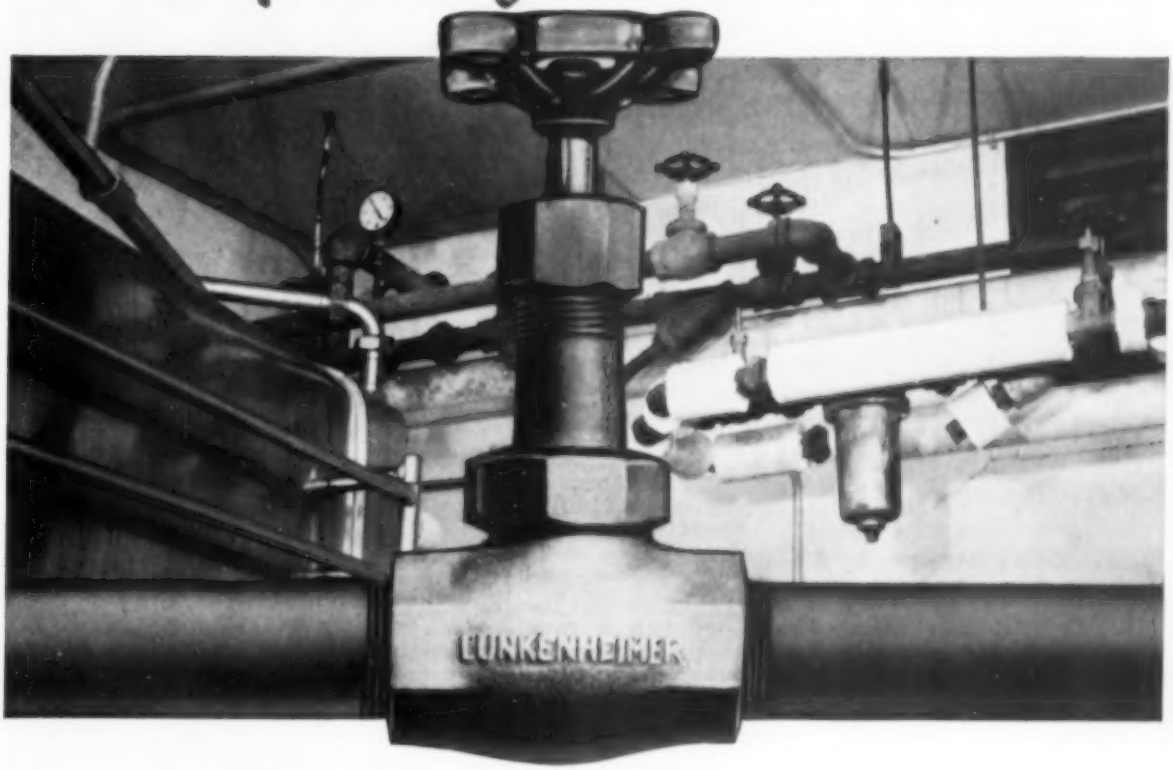
◆ IS YOUR DISTRIBUTION SYSTEM GROUNDED?—in 3-phase installation the grounded wye system offers four big advantages: grounded systems are safer for both equipment and personnel; maintenance cost and time are less; costs for new installations are equalized by ground detecting and ground location equipment necessary in ungrounded systems; and with a 480 volt wye system, 277 volt line to neutral circuits can be used for fluorescent lighting as step up and step down transformers are eliminated and copper costs and losses are less because of the higher voltage lighting circuit.

One comparison favors the ungrounded circuit. With a continuous or "batch" type operation and an ungrounded power system, a ground on one phase will not necessitate an immediate shutdown. The risk that a second ground will not develop in one of the remaining phases before there is time to conveniently shut down and clear the original ground may be taken.

◆ AIR FILTERS—disposable media, once-a-year maintenance and constant filter resistance are some of the advantages of American Air Filter Company's Roll-O-Matic. Operating displays have recently toured major industrial centers of the South & Southwest.

Roll-O-Matic is a media in which a thick blanket of coated bonded glass fibers is supplied in 65 ft rolls. Filter curtain is supported and conveyed on an endless screen that rotates over top and bottom spools in the filter casing. As the curtain moves, the glass fiber accumulates its dust load and is rerolled on lower spool for convenient disposal.

ONE ANSWER
to spiraling maintenance costs



LQ600—The Most Maintenance-Free Bronze Globe Valve Ever Developed!

The moment a maintenance man touches a wrench to a valve, its cost can double. You can't bring down that labor expense in many plants, but you can buy valves with an outstanding record of trouble-free service. At no time in history has valve quality been so important to your total plant expense. And quality has been a tradition for nearly a hundred years at The Lunkenheimer Company, Box 360, Annex Station, Cincinnati 14, Ohio.

See your cost-reducing Lunkenheimer distributor . . . or write for literature.

BRONZE • IRON • STEEL • PVC

The cost of a LUNKENHEIMER VALVE
Gets smaller...and smaller...and smaller...
with each passing year of dependable service

L-757-9

LUNKENHEIMER QUALITY

LUNKENHEIMER®
THE ONE *Great* NAME IN VALVES

Facts and Trends (Continued)

For average service under normal dust conditions, the media usage with a 10 foot high section would be less than 1 1/2 ft per 70 hour week and a single roll (65 ft) would be a full year's supply. The new product offers clean air by the roll and once-a-year maintenance.

◆ SHIELDED ELECTRIFICATION—By covering its standard bus bar electrification with a specially designed polyvinyl chloride extrusion, American Monorail has eliminated all the hazards of open bar conductors. It is called "Kant-Shock" for monorail track and crane systems.

◆ ULTRASONIC TRENDS—multi-whistled sirens, similar to toy dog whistles which humans cannot hear, are being experimently used in smog control and fog dispersion. By the principle of agglomeration, soot particles can be made to vibrate at intense ultrasonic frequencies, causing them to bump together, adhere, and, because of their added weight, fall to the ground. Placed in an industrial chimney, smog particles will fall back into a collector, thus allowing only clean, smog-free fumes to be dispersed into the upper atmosphere.

In reporting on recent developments Gulton Industries also state that a number of ultrasonic instruments have been developed for liquid level detection and sensing which control the filling and emptying of tanks and regulate the flow in pipes of gallons or pounds per minute to within an accuracy of 1%.

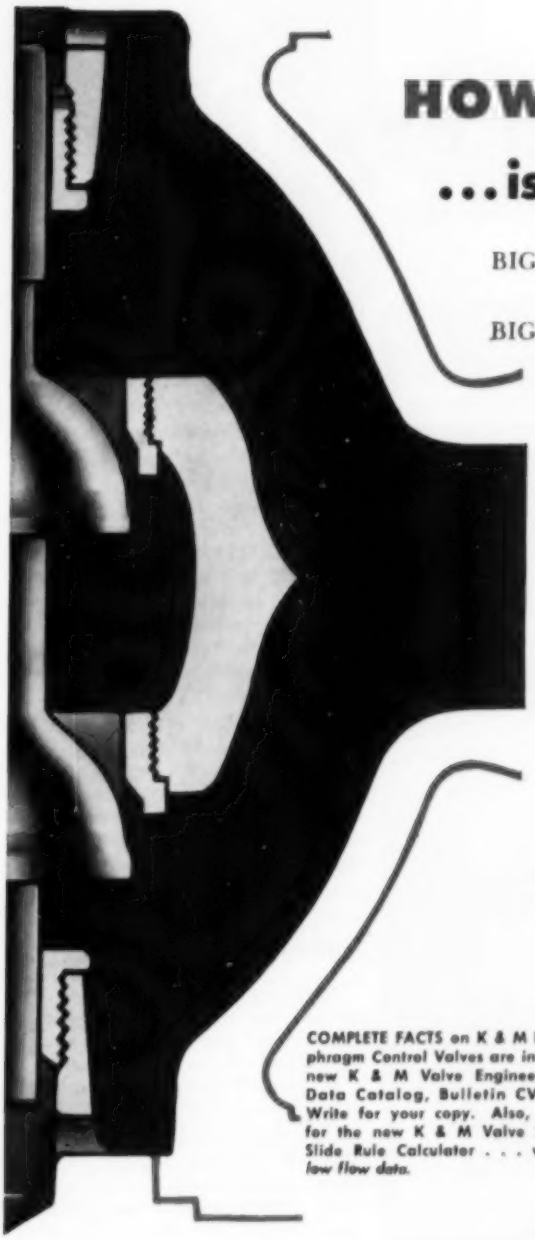
◆ A VENT is seldom a seal—but it is in the new Allis-Chalmers 1750 hp weather-protected motor line. Just in case any oil or oil vapor might pass out of the bearing enclosure thru the regular seals it can never reach the motor interior.

Instead, it enters an annular chamber at the rear of the bearing housing. Pressurized air from the motor fan region is introduced into this pressure chamber and is vented to atmosphere. Positive protection is provided.

◆ WHAT'S NEW IN EQUIPMENT & METHODS?—Over 100 new catalogs and bulletins for plant engineering personnel are briefed in this issue of SPI. Check on these new ideas and methods and use SPI Reader Service for more detailed information.

"How to Solve Your Pumping Problems" by Geo. D. Roper Corp. . . . a G-E operation and application manual on general purpose controls . . . combustion analyzer by Bailey Meter . . . Kalamazoo's portable band saw for 6" rounds and 10" flat . . . electric power hammer by I-R for drilling, routing, cleaning, etc.

"Banish Your Steam Trap Troubles" a new booklet by Yarnall-Waring . . . Leavitt Machine's power-driven, one-man operated valve-in-line reseater . . . Eutectic Welding's new wall training charts for torch and metallic arc welding . . . Lintoff, Industrial Products' liquid dispersant which removes lint from humidifiers and air washers . . . and Illinois Water Treatment Company's new method of ion-exchange, which combines chemical advantage of upflow with proven mechanical advantage of downflow.



HOW BIG

...is a K & M six-inch valve?

BIG enough to pass 500 gpm of cold water through the valve body at a constant drop of one pound pressure.

BIG enough to provide the largest flow coefficient available in a standard six-inch diaphragm control valve.

Body flow passages of all K & M valves, for example, actually average 140% of cross-sectional pipe area. There's more space for fluid to flow . . . smoothly, freely and without turbulence. Frequently a smaller nominal size K & M Valve provides sufficient capacity to satisfy requirements that formerly called for a larger, more expensive valve.

Inner valve open areas, on the other hand, average only 80% of cross-sectional pipe area. Therefore, flow restrictions occur principally across the inner valve . . . where the restriction is controllable throughout the entire range of valve stem travel.

This K & M design often permits lower initial costs . . . always contributes to more precise flow regulation through the K & M Inner Valve.

COMPLETE FACTS on K & M Diaphragm Control Valves are in the new K & M Valve Engineering Data Catalog, Bulletin CV53. Write for your copy. Also, ask for the new K & M Valve Size Slide Rule Calculator . . . with *low flow data.*

C_V COMPARISON TABLE

Valve Size	K & M	Valve B	Valve C
¾"	10.9	8.4	8
1"	17.3	14.9	12
1½"	39.1	33.2	28
2"	61	57	48
2½"	97.7	71.0	72
3"	150	116	100
4"	219	197	165
6"	500	364	360

Based on the maximum C_V at rated travel through the valve body. From manufacturers most recent slide rules or tables.

diaphragm control valves

K&M

Valve Makers Since 1879

KIELEY & MUELLER, INC.

64 Genung Street
Middletown, New York

Southern News Briefs

Clark Bros.—New Orleans

Clark Bros. Co. of Olean, New York has opened new, modern office and warehouse facilities at 800 Central Expressway, **New Orleans.** Clark Bros., a division of Dresser Industries, Inc. are well known manufacturers of compressors and gas turbines for the petroleum, chemical and general industries.

According to **John Cooper,** New Orleans Branch Manager, the new office and warehouse is being established to better serve the rapidly growing industries of Louisiana, southern Mississippi and southern Arkansas. Prior to his present appointment Mr. Cooper lived in Tulsa, Oklahoma where he served as a district sales engineer for Clark.

N.S.P.E. Officers

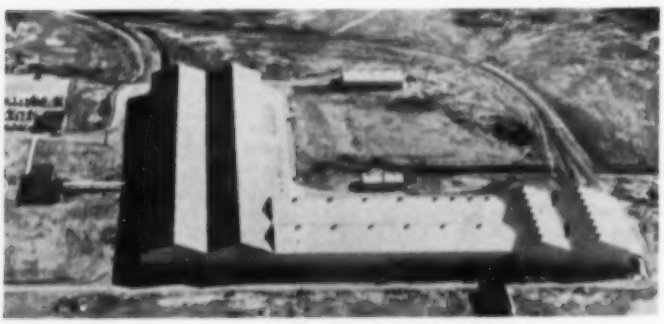
Garvin H. Dyer, director of the Missouri Water Company and manager and chief engineer of the Independence Div. of the firm, is now president of the National Society of Professional Engineers.

John B. McGaughy of Lublin, McGaughy and Associates, Architects and Consulting Engineers in Norfolk and Washington, D. C.; **Harry G. Kennedy,** executive secretary of the Kanawha Coal Operators' Association, Charleston, West Virginia; and **Clark A. Dunn,** executive director of the Div. of Engineering Research at the Oklahoma Institute of Technology, are regional vice presidents of the national association.

Okonite — East & Southeast

The appointment of **Dewey A. White** and **J. G. Wicks** as regional sales managers of **The Okonite Company,** manufacturers of insulated wire and cable, has been announced by Charles M. Kirkland, vice president in charge of sales.

Mr. White, district manager of the Company's Birmingham district since 1941, will now supervise the activities of the Birmingham, New Orleans and Dallas districts. The Philadelphia, Boston, Cincinnati, Syracuse, Detroit, Cleveland and Pittsburgh offices will report to Mr Wicks, who has been Philadelphia district manager since 1954. Both men will work closely with I. W. Borda, recently named vice president and general sales manager, to strengthen communications between headquarters and the expanded sales force.



$5 Million Extrusion Plant – Richmond

THE LATEST Reynolds Metals Company aluminum fabricating facility recently started operations in Richmond, Virginia. The $5,500,000 plant, employing approximately 450 with an annual payroll of roughly $2.5 million, is a fully integrated operation designed to process aluminum pig and scrap into finished extrusions. Extruded aluminum alloy shapes are produced by forcing cast billets, heated to a plastic-condition, thru a steel die opening — like squeezing out a ribbon of toothpaste — with a force of several million pounds.

One of 53 plants owned and operated by Reynolds and its affiliated and subsidiary companies, the mill and grounds cover 50 acres, six of which are under roof. In addition to the new aluminum mill, Richmond is headquarters for Reynolds Metals Company. Reynolds also has a foil plant, smelting plant, packaging plant and two research laboratories in the city.

Swartwout — Tulsa

Appointment of **Stephen K. Wilmot** as manager of the **Swartwout Co.'s** Tulsa district office has been announced.

Prior to joining The Swartwout Company, Mr. Wilmot was with the Midwestern Instrument Company, Tulsa, Oklahoma, as a service engineer.

Mr. Wilmot will make his headquarters at The Swartwout Company's district office at 310 Thompson Bldg., Tulsa 3, Oklahoma.

McQuay—New Orleans

The **R. K. Goode Company,** 4052 Thalia St., New Orleans 25, La. is now a sales representative of McQuay, Inc., Minneapolis manufacturers of heating, air conditioning and commercial refrigeration equipment.

(*Continued on Page* 12)

Control section of Kellogg's electronic computer.

Electronic Route to Lower Steam Power Piping Costs

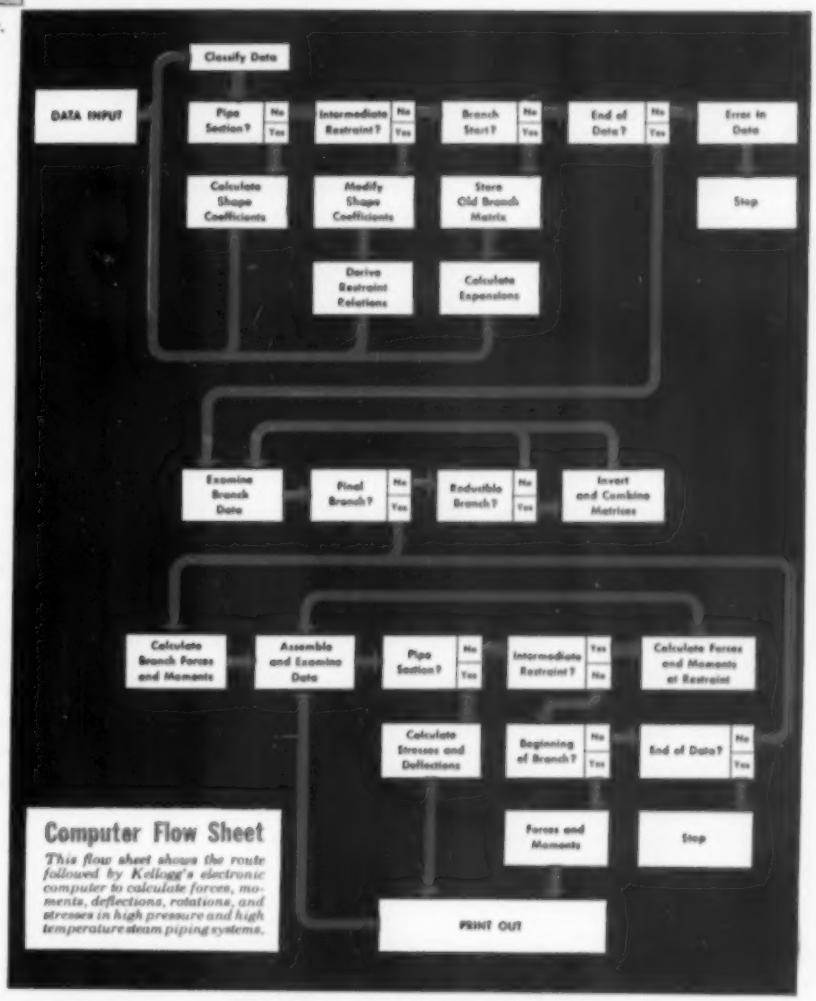
Kellogg's Digital Computer Permits More and Faster Accurate Flexibility Analysis of Complex Main and Reheat Piping Systems

KEEPING PACE with the increasingly critical pressures and temperatures of the modern steam-electric power plant are M. W. Kellogg's advanced techniques for pre-determining stresses and reactions of main and reheat piping. Most recent addition is a large magnetic drum digital computer, used to calculate forces, moments, deflections, rotations, and stresses in complex piping systems.

By enabling Kellogg engineers to undertake a far greater number of calculations in less time than ever before, electronic computation makes possible the ultimate or near ultimate piping system designs. Pipe runs can often be shortened without sacrificing required margins of safety; capital investment and maintenance costs reduced; operating efficiency increased.

A pioneer in flexibility analysis techniques, which include manual calculations, model testing, and a smaller electronic computer, Kellogg continues its pioneering in the power piping industry by the addition of this high speed computer to its New York engineering facilities.

A cordial invitation to see the M. W. Kellogg electronic computer at work is extended to consulting engineers and to engineers of power generating companies and their equipment manufacturers. Appointments may be made through the Sales Manager, Fabricated Products Division.



Computer Flow Sheet

This flow sheet shows the route followed by Kellogg's electronic computer to calculate forces, moments, deflections, rotations, and stresses in high pressure and high temperature steam piping systems.

FABRICATED PRODUCTS DIVISION
THE M. W. KELLOGG COMPANY, 711 THIRD AVENUE, NEW YORK 17, N. Y.
A SUBSIDIARY OF PULLMAN INCORPORATED

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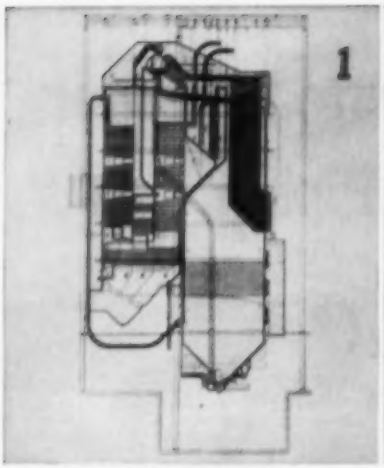
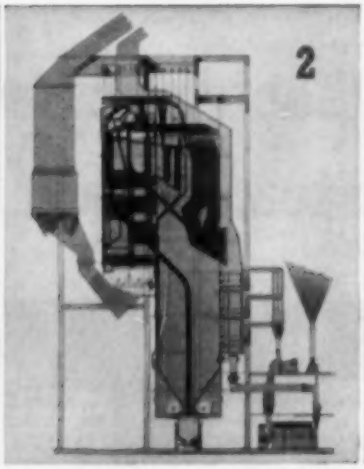
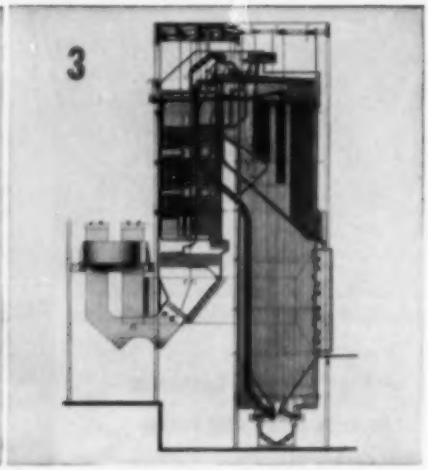
POWER PIPING—THE VITAL LINK



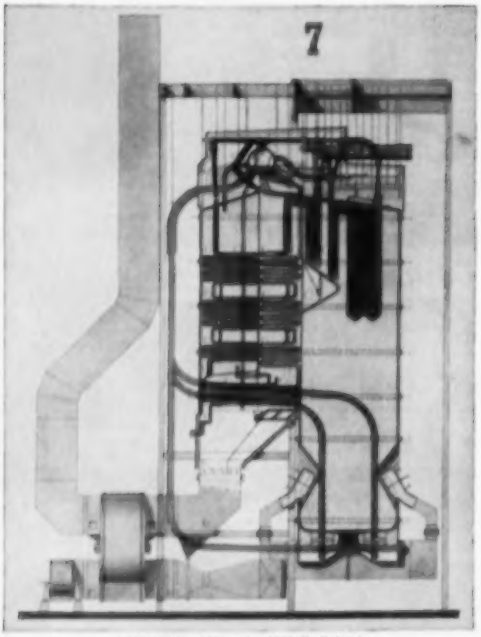
600,000#, 1700 psi., 1000 F. Reheat



1,000,000#, 2075 psi., 1005 F. Reheat



600,000#, 1850 psi., 1000 F. Reheat

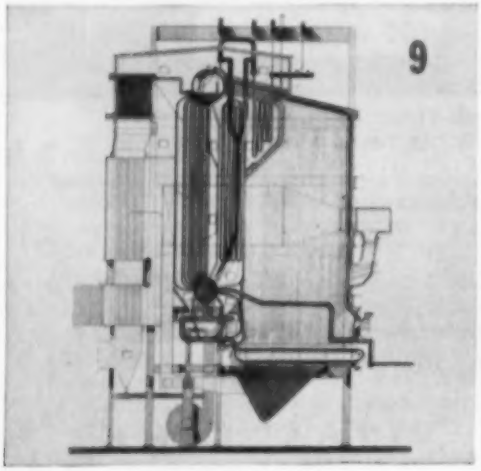


1,550,000#, 2125 psi., 1005 F. Reheat
TURBO FURNACE

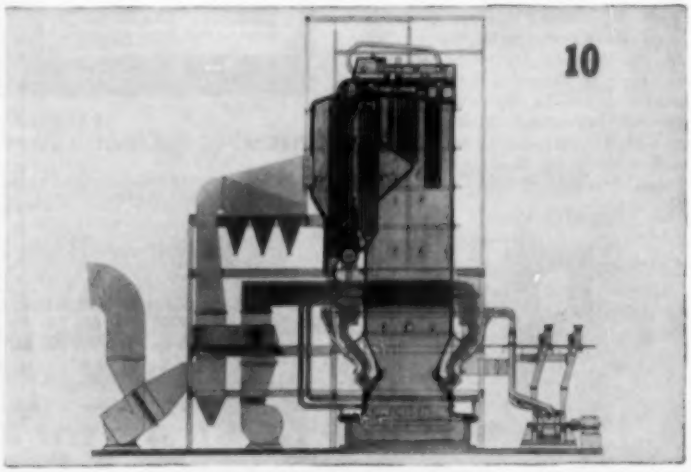
RILEY CENTRAL

that cover a wide range of

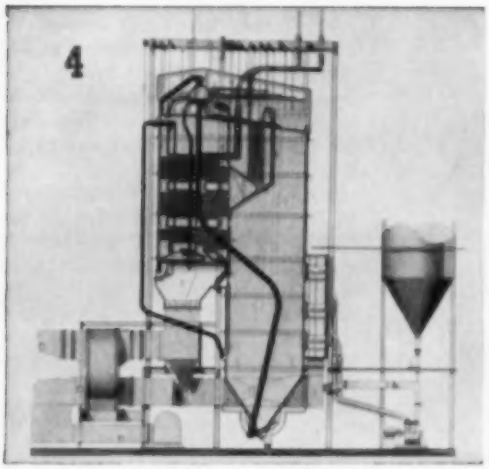
1. Florida Power Corporation – Oil
2. Public Service Company of Indiana, Inc. – 4 Units – Coal
3. Central Illinois Light Co. – Coal
4. Minnesota Power & Light Co. – 2 Units – Coal, Future Oil, Gas
5. Dallas Power & Light Co. – Gas, Oil, Future Lignite
6. Texas Electric Service Co. – Oil, Gas
7. Louisiana Power & Light Co. – Gas, Future Oil, Coal
8. Texas Electric Service Co. – Gas, Oil, Future Coal
9. Montana Dakota Utilities – Lignite
10. Delaware Power & Light Co. – 3 Units – Fluid Coke, Gas, Oil, Coal
11. Central Louisiana Electric Co. – 2 Units – Gas



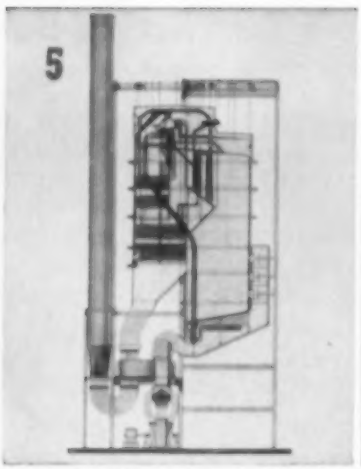
250,000#, 1825 psi., 985 F.



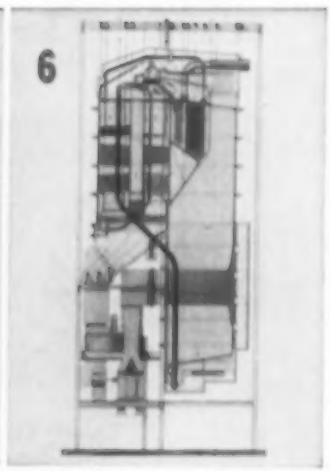
500,000#, 1425 psi., 950 F. TURBO FURNACE



500,000 #, 1725 psi., 1005 F. Reheat



1,050,000 #, 1725 psi., 1005 F.



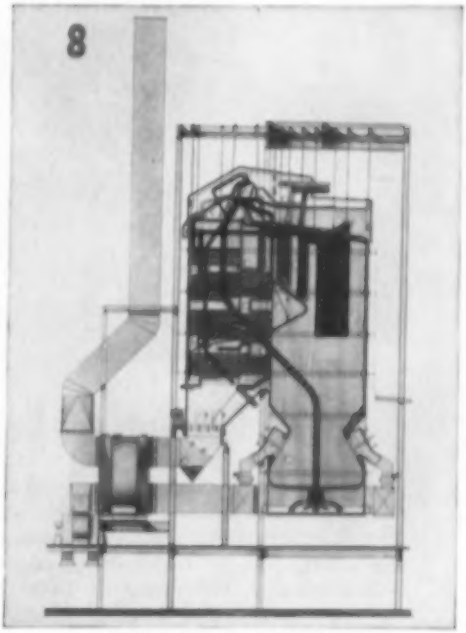
1,200,000 #, 2125 psi., 1005 F. Reheat

STATION INSTALLATIONS

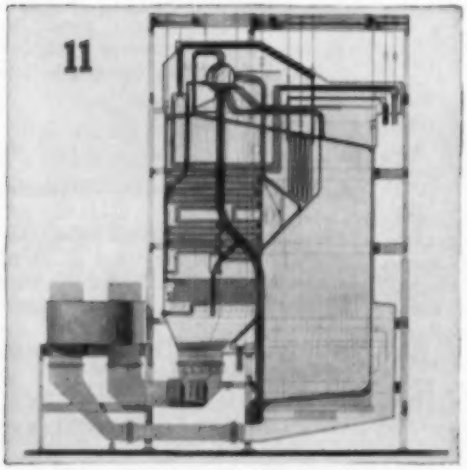
typical operating characteristics

These Riley Central Station Boiler designs are typical of many units that have been sold in recent years to a growing list of public utilities. This gratifying acceptance is a result of not only dependable and efficient operating characteristics, but because Riley, with its wide range of fuel burning products and the recent development of the TURBO FURNACE for multi-fuels, can offer the most economical solution to virtually any fuel burning situation.

Riley Boilers and Fuel Burning Equipment are *Designed, Manufactured, Erected and Serviced* under a single contract.



825,000 #, 1750 psi., 1005 F. Reheat
TURBO FURNACE



350,000 #, 1650 psi., 1005 F. Reheat

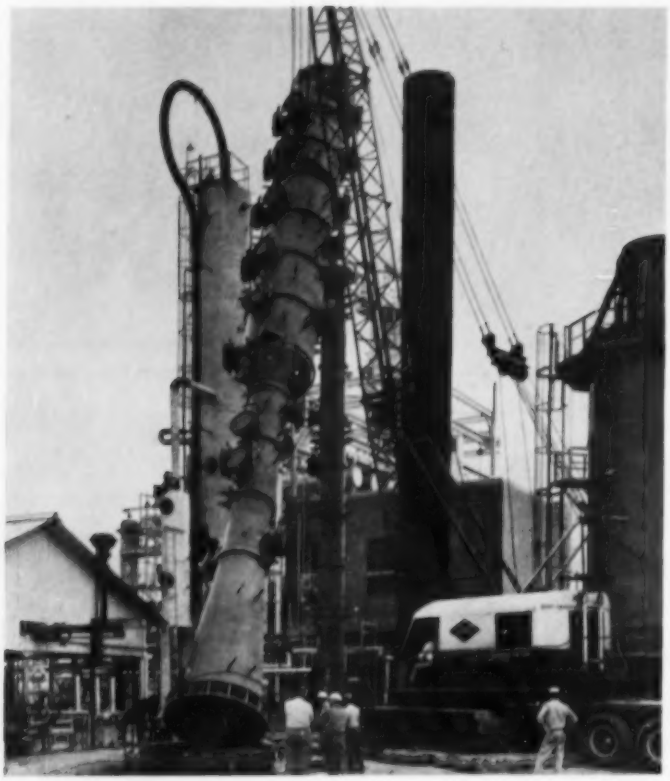
A survey of your plant by a consulting engineer could show ways of making surprising savings in your power costs.

RILEY

Stoker Corporation

WORCESTER, MASSACHUSETTS

Sales Offices: Worcester, New York, Philadelphia, Buffalo, Pittsburgh, Cleveland, Detroit, Chicago, Cincinnati, Charlotte, New Orleans, Atlanta, St. Louis, Kansas City, St. Paul, Houston, Denver (Englewood), Salt Lake City, Los Angeles, San Francisco, Portland, Seattle.



Space Rocket at Corpus Christi?

MAINTENANCE access thru a total of 26 manway "blisters" give this tower the appearance of a futuristic space rocket. But, it is actually a secondary fractionating tower shown during installation at Sinclair Refining Company's Corpus Christi, Texas refinery. Fabricated by *Delta Tank Manufacturing Co., Inc.*, of Baton Rouge, Louisiana, for the Tellepsen Construction Co., the unusual tower rises more than eight stories into the sky, weighs more than 90,000 lb and has an inside diameter ranging from 3 to 6 ft.

Fischer & Porter Managers

Fischer & Porter Company, manufacturer of complete process instrumentation systems, has named managers for its newly organized southeastern and southwestern sales regions.

William Trethaway will manage F&P's southeastern area, to include the Atlanta, Birmingham and Knoxville offices as well as the two offices in Florida at Clearwater and Jacksonville. Mr. Trethaway joined Fischer & Porter in 1951, serving in the engineering department before his initial sales appointment to the Atlanta office.

Glen Dorflinger has been given charge of the southwestern region which includes offices in El Paso, Dallas, Houston and New Orleans. Mr. Dorflinger was formerly manager of F&P's Houston office.

Fischer & Porter recently relocated its Houston branch in a new 5200 sq ft office-warehouse at 3783 Richmond Avenue.

Bristol — Southeast

The appointment of **James W. Caswell** as the Southeastern representative for the Socket Screw Division of **The Bristol Company,** Waterbury, Connecticut, has been announced by H. E. Beane, vice president.

Mr. Caswell will be headquartered at the Bristol branch office at 216 Healey Bldg., Atlanta, Ga. He will contact industrial distributors handling Bristol's line of socket screw products in the seven states of Alabama, Georgia, Florida, Mississippi, Tennessee, and the North and South Carolinas.

Patent Scaffolding — La.

The Patent Scaffolding Co., Inc., has opened offices and warehouse facilities at 8000 Edinburgh Street, New Orleans, La., according to a recent announcement.

The plant will carry complete stocks of "Gold Medal" Ladders for industrial plants and maintenance crews, and complete stocks of "Gold Medal", "Trouble Saver" and "Tube-Lox" Scaffolding for general contractors, concrete contractors and sub-contractors in Louisiana and Mssissippi.

Ryerson & Son — Charlotte

Hiram A. Walker is the new office and credit manager at the Charlotte, N. C., steel service plant of **Joseph T. Ryerson & Son, Inc.,** according to Wilson A. Young, general manager. For the past 10 years he was in the credit department at the company's Philadelphia plant.

The company has a new plant under construction in Charlotte which will have several times the capacity of the present quarters. Completion is scheduled for late 1957.

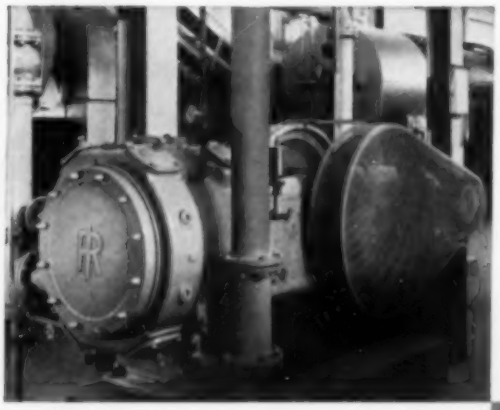
A. W. Cash Company—Memphis

Engineered Instrument Sales Company, Box 9947, Memphis 12, Tenn. is now a representative for the Cash Standard and Cash Standard Stacon lines of pressure, temperature, hydraulic, process and combustion control equipment.

(*Continued on Page* 31)

EVACUATE

√Continuously √Dependably √Economically



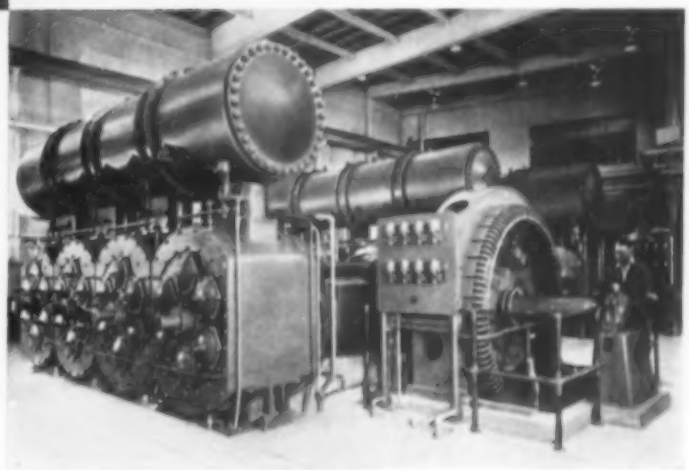
WITH

HEAVY-DUTY IR VACUUM PUMPS

...now available in sizes from 7½ hp to 2000 hp, for vacuums down to 29.8" Hg

(Air-cooled units . . . ½ to 7½ hp)

Ingersoll-Rand two-stage ES vacuum pump serving evaporators in a large salt company plant. These horizontal, heavy-duty, single-cylinder units are available in piston displacements of 114 to 3140 cfm, for vacuums down to 29.2" Hg single-stage and 29.8" Hg two-stage.



Each one of three 2000-hp Ingersoll-Rand HHE vacuum pumps has a piston displacement of 51,508 cfm. These units exhaust air from large test chambers used to simulate high altitude conditions.

Ingersoll-Rand reciprocating dry vacuum pumps are designed and built to give dependable performance under any or all of the following conditions:

1. Wherever continuous heavy-duty, full-load service is essential.
2. Where power cost is an important factor.
3. In plants where supervision is limited.
4. Where low over-all operating costs must be maintained.

The wide range of standard sizes, with flexibility of cylinder design and choice of electric, steam or gas-engine drive, makes these heavy-duty units adaptable to practically all vacuum requirements for handling clean, dry air or gases. Cylinders are normally equipped with I-R Channel Valves—known the world over for quiet, efficient operation and remarkable freedom from maintenance.

Ingersoll-Rand also builds a full line of steam jet ejectors. I-R engineers can select the reciprocating or centrifugal pump, or steam-jet ejector, or combination of these that will give the most economical vacuum production for any capacity requirement.

Your I-R representative will be glad to give you complete information on the vacuum equipment best suited to your needs.

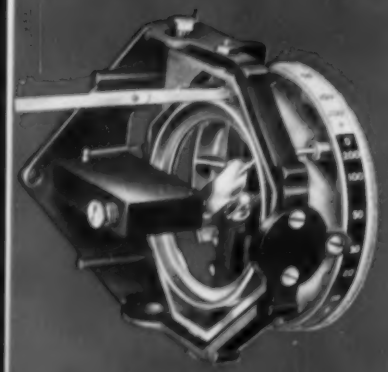
Ingersoll-Rand

I-447 11 BROADWAY, NEW YORK 4, N.Y.

COMPRESSORS • GAS AND DIESEL ENGINES • ROCK DRILLS • PUMPS • TURBO-BLOWERS • AIR AND ELECTRIC TOOLS

Masoneilan 60000 Series . . .

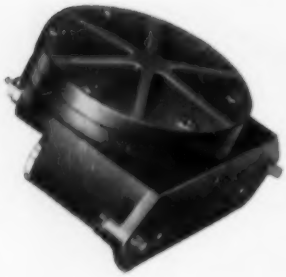
ALL-IN-ONE



Exclusive gimbal unit combines primary and feed-back motion to provide three types of control in one instrument without change of parts — proportional, on-off and differential gap, each with direct or reverse action.

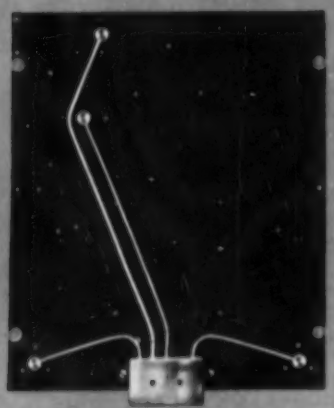
Pen Movement

Ball and socket pivot, common axis of rotation for pen or pointer and set point index, provides maximum flexibility in adding pens and supplementary control functions. Gearless friction drive permits precise adjustment of set point.



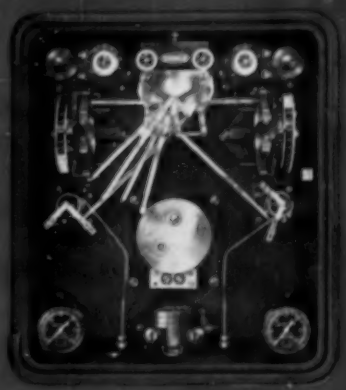
This is the Masoneilan balanced amplifying relay type pilot featuring large capacity, frictionless floating action valve and cleanable sapphire orifice.

60000 Series includes indicating controllers and transmitters, recorders and recording controllers.



Plug-in pneumatic units plus manifolding of air passages practically eliminate air tubing in case — assure simplicity, ready accessibility.

One simple adjustment of knurled wheel selects type of control and simultaneously adjusts proportional band or width of differential gap.

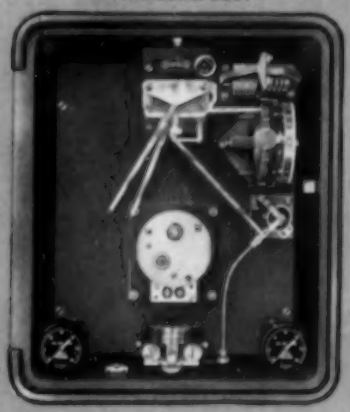


Availability of dual (two complete controllers), duplex (one primary element — two control mechanisms), or dual-selector (two controllers with common pilot) for special purposes — in one case.

PNEUMATIC CONTROLLER

Advanced design features exclusive Gimbal Unit, plug-in pneumatic units, and interchangeable unit subassemblies — enabling selection of variety of control types and supplementary functions IN ONE CASE.

Basic Controller



The basic controller in which all units are readily interchangeable — all adjustments and settings are made without disturbing the chart. Calibration is simple and will not drift.

The Masoneilan 60000 Series offers a basic design instrument with a wide selection of variations and combinations with which you are able to obtain accurate, dependable, pneumatic process control — however complex.

Types of Control include On-Off, Proportional, Differential Gap, Proportional-Reset, Proportional-Derivative, Proportional-Reset-Derivative.

Supplementary Functions include Pneumatic Set, Time Schedule, Differential.

Combinations possible are Dual, Dual Selector and Duplex types.

Recording, Indicating and/or Transmitting varieties are available.

The features illustrated here, plus sturdy construction, ease of calibration and adjustment, accessibility and freedom from maintenance, make the 60000 Series truly the "instrument man's instruments" and the treasurer's friends.

Ask the Mason-Neilan office nearest you for a demonstration of these advantages — or write for catalog.

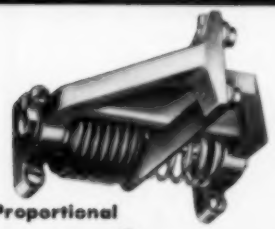
MASON-NEILAN

Division of Worthington Corporation

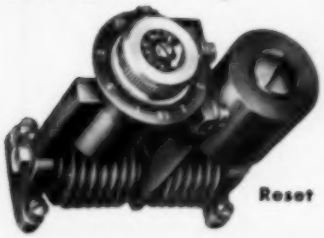
35 Nahatan Street, Norwood, Massachusetts

SEVENTY-FIFTH 75 ANNIVERSARY

Sales Offices or Distributors in the Following Cities:
New York • Syracuse • Chicago • St. Louis • Tulsa • Philadelphia • Houston • Atlanta • Cleveland
Cincinnati • Kansas City • Phoenix • Detroit • San Francisco • Louisville • Salt Lake City • El Paso
Albuquerque • Charlotte • Los Angeles • Corpus Christi • Denver • Appleton • Birmingham
New Orleans • Seattle • Mason-Neilan Regulator Co., Ltd., Montreal and Toronto

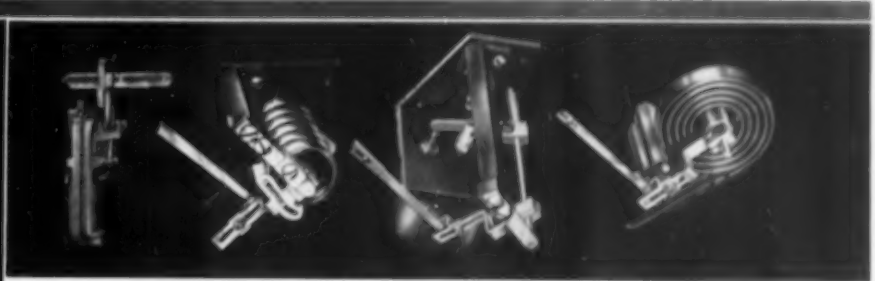


Proportional



Reset

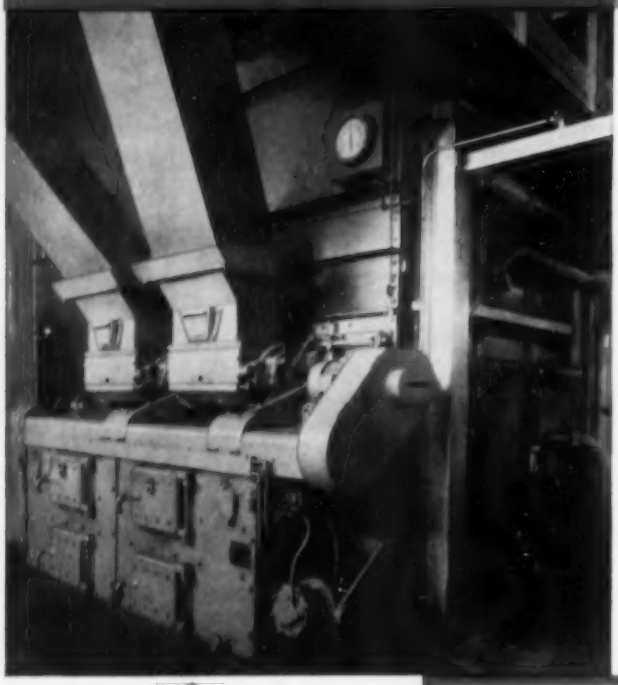
Addition of reset, derivative, pneumatic set, differential or time schedule functions by means of standard interchangeable subassemblies.



Wide selection of primary elements to suit process requirements — helical or spiral coils, bellows, diaphragm, or mechanical connection such as flow meter shaft.

INCREASED PRODUCTION
with
GREATER FUEL ECONOMY
Smokeless Operation
DETROIT ROTOSTOKER TYPE C-C
(Continuous Cleaning)

at Carlisle Tire and Rubber Division
CARLISLE, PA.



It is not uncommon for the Detroit RotoStoker, Type C-C to make fuel savings ranging from 10% to 25%. Where process steam is used in production, as in this plant, fuel economy is usually accompanied by a substantial production increase.

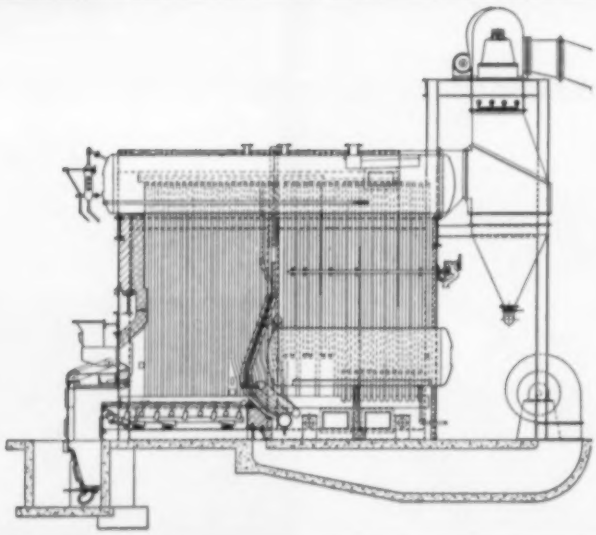
In addition the Type C-C provides smokeless operation at light loads as well as at full capacity—important in built-up areas.

Other advantages of Type C-C are:

- **Continuous uninterrupted steaming.**
- **Ample capacity and high availability.**
- **Quick response to load fluctuations.**
- **Fuel feeders and distributors handle high moisture coals without clogging.**
- **Available to develop 5,000 to 75,000 lbs. of steam per hour.**
- **Easily applied to new or existing boilers.**
- **Low Maintenance.**

Detroit RotoStoker Type C-C (continuous cleaning) in the plant of Carlisle Tire and Rubber Division of Carlisle Corporation. This unit has a capacity of 25,000 pounds of steam per hour. Either West Virginia or Pennsylvania 13,500 BTU coal is used.

Keeler Type CP Boiler with Detroit RotoStoker Type C-C. Ashes discharge at front, are removed by a conveyor. No basement is needed.



DETROIT STOKER COMPANY
MAIN OFFICE AND WORKS
MONROE, MICHIGAN

District Offices or Representatives in Principal Cities

IPS—BUTT WELDING FITTINGS
½"-42" From Sch. 5S to 4" Walls

ASA and MSS FLANGES
½"-24" 150 through 2500 lbs.

TUBE O.D.—BUTT WELDING FITTINGS
½"-36" From .049" to .250" Wall

LARGE O.D. and TEMA FLANGES
Up to 20' in Diameter
LONG WELDING NECKS
1"-24" 150 through 2500 lbs.

UNIONS
⅛"-4" 150 lbs. and 2000 through 6000 lbs.

SCREWED and SOCKET FITTINGS
⅛"-4" 150 lbs. and 2000 through 6000 lbs.

LADISH

FOR *Complete Service* IN *Controlled Quality*

FORGED AND WROUGHT FITTINGS

CARBON • ALLOY
STAINLESS STEELS
AND ALUMINUM

WHATEVER your fittings requirements . . . regardless of the type, size, wall thickness, pressure rating or material specification . . . you can get prompt, efficient, *complete service* by specifying LADISH and ordering from your local Authorized Ladish Distributor.

A broad, full-range line produced to unsurpassed standards of metallurgical and manufacturing integrity . . . plus adequate distributor stocks . . . gives you double assurance of satisfaction.

For complete service on your fittings requirements . . . call your Authorized Ladish Distributor.

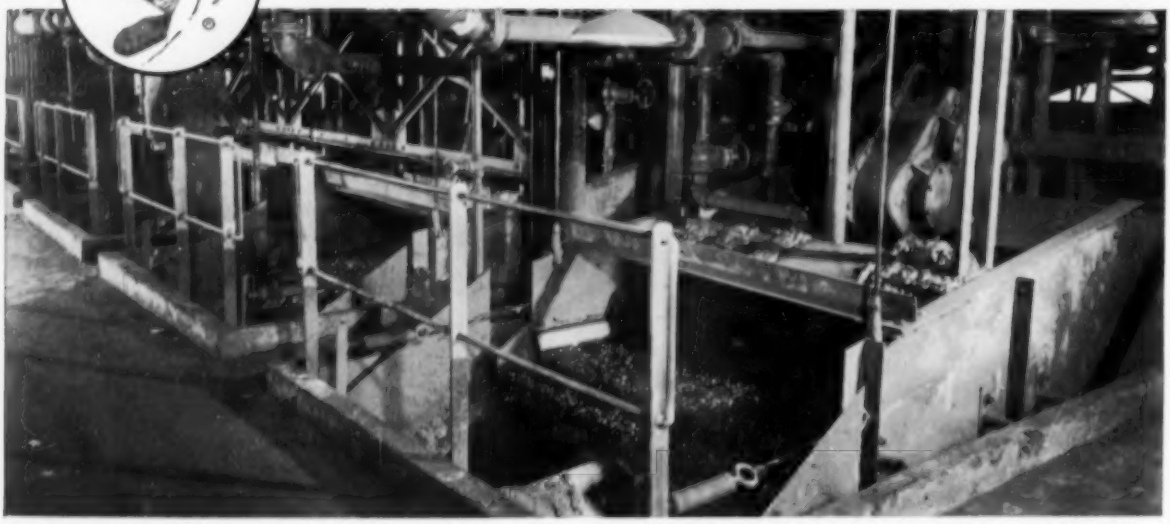
Catalogs available on request. Please indicate specific product lines for which information is desired.

THE COMPLETE *Controlled Quality* FITTINGS LINE

LADISH CO.

CUDAHY (Milwaukee Suburb) WISCONSIN

WHY CHESSIE'S RAILWAY IS FIRST IN COAL



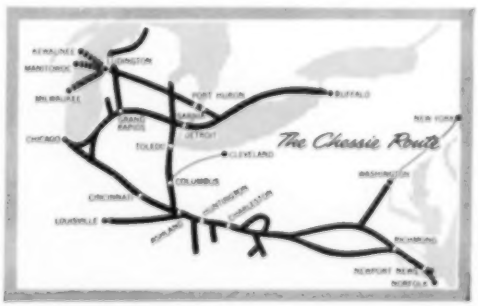
SUPERIOR COAL. Typical of the modern methods employed by producers on the C & O is this battery of screens de-watering washed coal. The naturally superior coals found in the Chessie area can be sized and processed to suit your exact requirements.

SUPERIOR SERVICE. Chesapeake and Ohio Railway is equipped to give you prompt and dependable deliveries through expanded high-speed yards and improved signal systems. There are plenty of good-order cars in the world's largest fleet. A prompt repair program keeps 99% of the C & O cars in constant operation.

For dependable deliveries of top quality coals, contact coal producers on the C & O. And for specific help in meeting your own fuel requirements, write to: R. C. Riedinger, General Coal Traffic Manager, Chesapeake and Ohio Railway Co., Terminal Tower, Cleveland 1, Ohio.

Chesapeake and Ohio Railway

WORLD'S LARGEST CARRIER OF BITUMINOUS COAL



THE NAME TO WATCH IN

HEAT TRANSFER EQUIPMENT

YUBA HEAT TRANSFER DIVISION

HEAT EXCHANGER DIVISION OF

formerly THE **LUMMUS** COMPANY

Important to every user of heat transfer equipment is the acquisition of the Heat Exchanger Division of The Lummus Company by Yuba Consolidated Industries, Inc. The management, sales and engineering personnel, as well as the designs, patents, and manufacturing facilities of the former Lummus operation at Honesdale, Pennsylvania, are now part of the YUBA nation-wide organization. YUBA is proud of the opportunity to identify its name with the long established recognition enjoyed by Lummus in the power industries, as well as in the chemical and petroleum processing fields. The continuing pioneering development for which Lummus has been known, and its existing commitments and obligations, will be carried forward in every phase under the YUBA name. For your current and future requirements consult YUBA first.

YUBA HEAT TRANSFER DIVISION

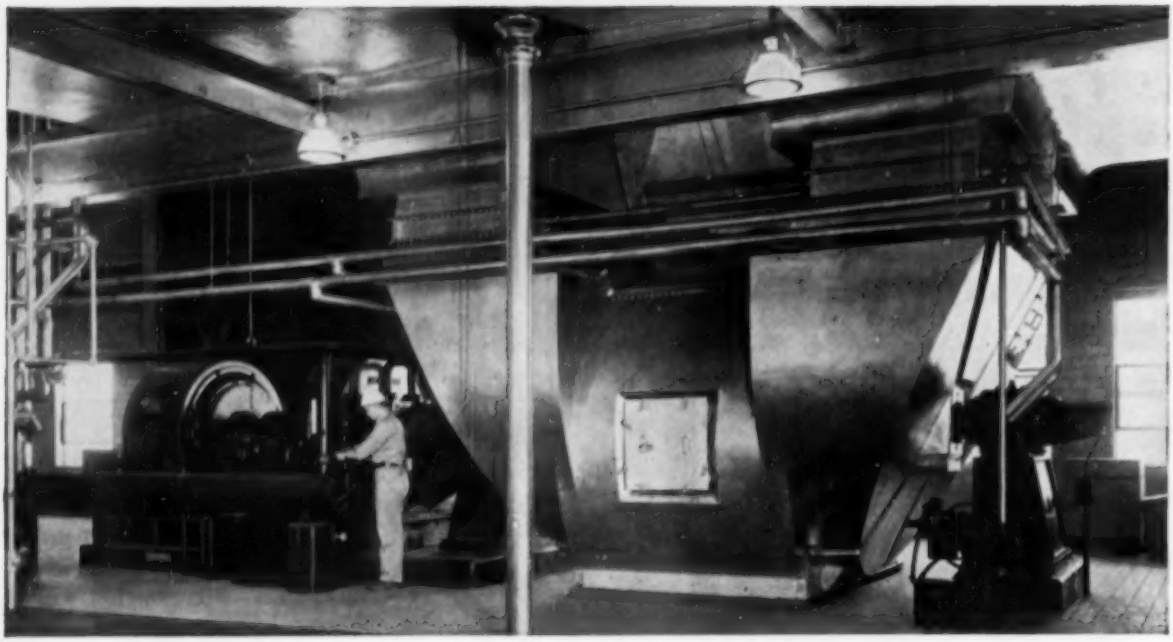
General Sales Offices and Plant — Honesdale, Pennsylvania
Eastern Division Sales Office — 385 Madison Ave., New York, N.Y.
Other Yuba Consolidated Industries, Inc. Plants: Buffalo, N.Y. • Richmond, Calif. • Benicia, Calif.

YUBA
CONSOLIDATED INDUSTRIES, INC.

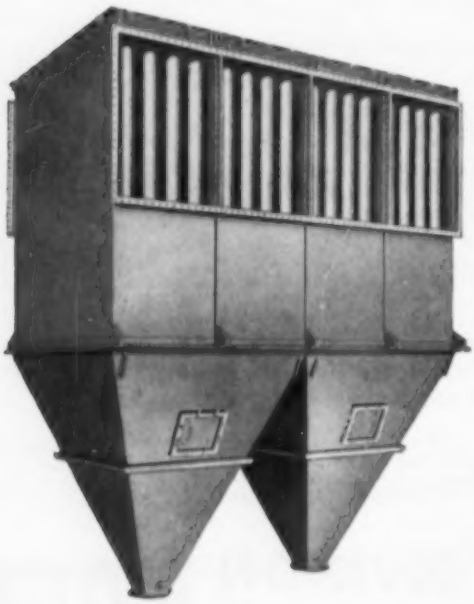
NATION-WIDE SALES REPRESENTATION IN PRINCIPAL CITIES

American Blower Air-Handling Equipment

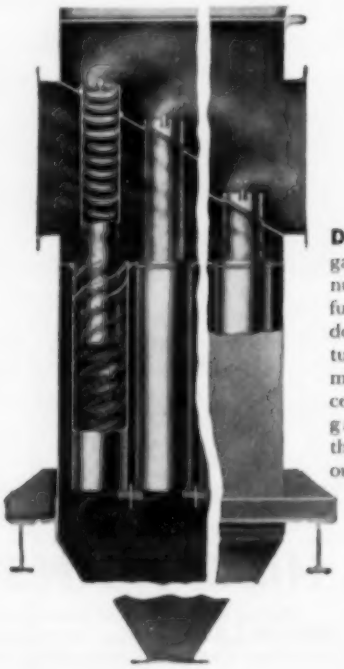
Proved efficiency



American Blower Induced-Draft Fans offer high static efficiency at low rpm. Like all American Blower mechanical-draft equipment, they are accurately formed and welded; fan rotors carefully balanced; all parts are minutely inspected for dimensional accuracy. They require a minimum space and minimum maintenance.



Series 342 Precipitator is easy to install and very effective in controlling fly ash. The over-all performance of each tube is comparable to the high efficiency of a small-diameter cyclone.



Dust-laden air or gas enters inlet plenum; gravity and centrifugal action force dust downward, adjacent to tube wall; dust is skimmed into gas-tight receptacle; cleaned air or gas moves upward through outlet tubes to outlet plenum.

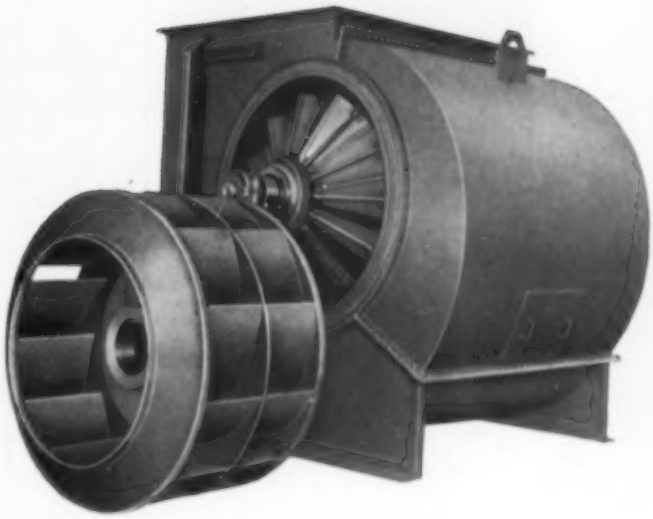
. . . maximum performance!

American Blower Mechanical Draft Fans

To meet the peak efficiency demanded of mechanical-draft equipment today, you'll be better off if you select spacesaving and efficient American Blower Mechanical Draft Fans.

Combining modern manufacturing methods with perpetual research and development, American Blower produces complete fan equipment for all types of mechanical draft. These induced-draft or forced-draft fans will fit your exact specifications with minimum maintenance and minimum boiler "outage."

If you are investigating mechanical-draft equipment—for new or existing installations—you'll do well to check on American Blower's line of Mechanical Draft Fans with guaranteed performance ratings. We welcome the opportunity of quoting on your requirements.



Forced Draft Fans for quiet indoor or outdoor installations. Heavy, reinforced housings and wheel-shaft assembly mean longer life, while special streamline inlets give utmost efficiency.

American Blower Precipitators

For maximum collection efficiency, choose the *best*—a dependable American Blower Precipitator!

Your fly ash problems can be met by installing a Series 342 Fly Ash Precipitator which offers good efficiency over the normal operating range, while it gives reliable, trouble-free performance.

American Blower's line of Fly Ash Precipitators and Dust Collectors has gained wide acceptance in leading public utilities and industrial plants.

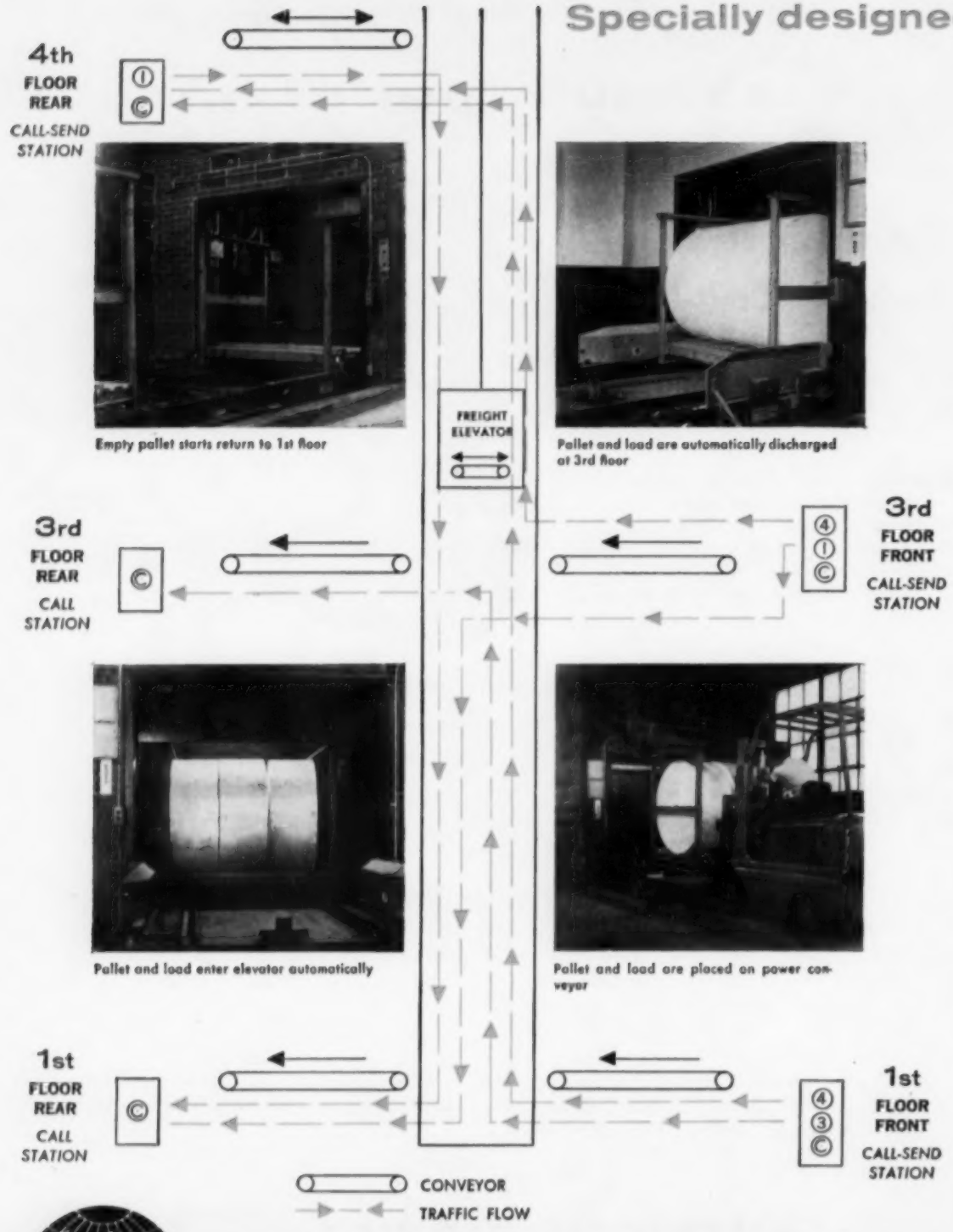
For complete information on American Blower Dust Collectors and Precipitators as well as other air handling products, call our nearest branch, or write direct. American Blower Division of American-Standard, Detroit 32, Michigan. In Canada: Canadian Sirocco products, Windsor, Ont.

AMERICAN BLOWER

Division of AMERICAN-Standard

QUALITY PROTECTS YOUR INVESTMENT... AMERICAN-Standard QUALITY IS AVAILABLE AT NO EXTRA COST

Specially designed



Otis **freight elevator**

"ENGINEERED SERVICE BY THE MAKER"

OTIS ELEVATOR COMPANY • 260 ELEVENTH AVENUE • NEW YORK 1, N. Y.

'Call-and-Send' system handles multi-floor freight automatically

OTIS and the Alvey Conveyor Company developed the special materials handling system illustrated and explained at the left. Power-operated conveyors serve as the elevator platform and the floor landings. Light-ray devices coordinate freight movement and elevator door operation.

This 'Call-and-Send' system was developed for the INDIVIDUAL DRINKING CUP COMPANY, a subsidiary of Dixie Cup Company in Easton, Penna.

OTIS is very much interested in helping to develop automatic materials handling systems.

Further, OTIS is able to assure the uninterrupted operation of these systems by providing OTIS Maintenance. The elevators in the 'Call-and-Send' system, five other freight elevators and one passenger elevator, all by OTIS, have been under OTIS Maintenance for a total of 60 years and are still operating at their original efficiency. The life of these elevators is being constantly extended indefinitely by checking and replacing all wearing parts in advance of their breakdown point. This prevents production losses. With OTIS Maintenance there's just one fixed monthly charge. This prevents unexpected, expensive repair bills. Basically OTIS Maintenance is designed to keep elevators running like new on a fixed budget basis.

Only Otis Maintenance offers these advantages to owners of Otis Freight Elevators

- ☑ **"Engineered Service" by the maker maintains the original efficiency of the installation and assures peak performance at all times.**
- ☑ **Services of factory-and-field trained men with a knowledge of elevatoring that can't be matched.**
- ☑ **Availability of original or improved replacement parts for every installation, regardless of its age.**
- ☑ **Freedom from unexpected, expensive repair bills. There's just one fixed monthly charge. It can be budgeted. It's adjusted annually, up or down, on labor and material costs only. Never because of the age or condition of the equipment.**
- ☑ **Guarantee of the maker's high standards of safety through the constant checking and replacing of parts in advance of their breakdown point.**
- ☑ **Elimination of all guesswork in testing and repairing by using specially designed tools and electronic equipment to minimize shutdowns.**
- ☑ **Systematic upkeep and replacement of parts extends the life of an installation indefinitely.**
- ☑ **The value of a maker's pride. A perfectly performing Otis installation is Otis' best salesman. That's why we're never satisfied with anything less than peak performance at all times.**

Baker Trucks with a paper-roll grab on a 360° revolving head can pick up, carry and stack rolls in any position.

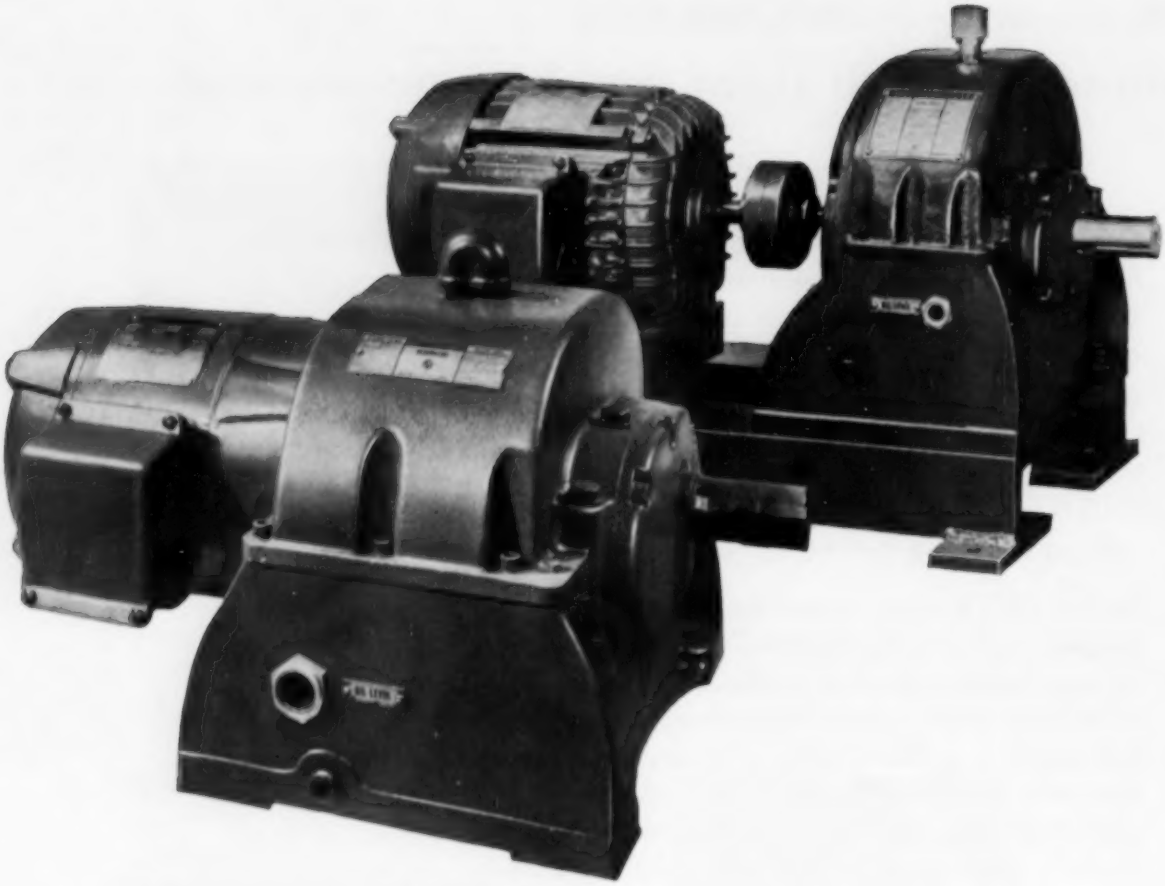
Baker® industrial trucks

The Baker-Raulang Company, an Otis subsidiary, is the maker of Baker Gas and Electric Industrial Trucks.

maintenance

that keeps freight elevators running like new

OFFICES IN 297 CITIES ACROSS THE UNITED STATES AND CANADA



GEARMOTOR OR PACKAGED DRIVE?

Your selection has a longer future with Westinghouse BPT gearing

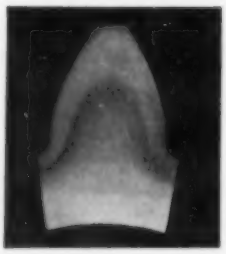
Westinghouse gearmotors and DB packaged drives offer important advantages to simplify drive problems and provide long-range dependability.

First, you'll find both lines of gearing readily available. They provide a wide selection in horsepower, speed ratios, direction of power take-off, mounting and coupling methods. This sort of flexibility is bound to save you time in answering space and load problems.

Second, Westinghouse BPT gearing, in both lines, assures a long-range solution to any drive problem. The exclusive BPT heat-treatment process produces unmatched, long wearing, shock-resistant qualities as a result of taper hardening each gear tooth. Heavy-duty, antifriction bearings also insure continued high efficiency under changing load demands.

Get all the facts on Westinghouse gearmotors and DB packaged drives today from your local Westinghouse salesman; or write Westinghouse Electric Corporation, 3 Gateway Center, P. O. Box 868, Pittsburgh 30, Pennsylvania.

J-07351



Exclusive BPT heat-treatment produces a taper hardness from surface to core of each gear tooth for toughness and hardness.

YOU CAN BE SURE...IF IT'S Westinghouse

✔ NUB diameter automatically sets welding gap for root pass.
✔ Robvon Backing Rings Form perfect welded-joints eliminating slag and icicles.
✔ Robvon Backing Rings Allow complete penetration and fusion.
✔ Robvon Backing Rings Eliminate the necessity of tack welding.
✔ Robvon Backing Rings Radiograph perfect certified welds.

ROBVON BACKING RINGS

APPROVED FOR WELDED PIPE, VALVES, AND FITTING JOINTS

Available in carbon steel, wrought iron, chrome alloys stainless steel, aluminum and copper

TYPE CCC Designed for quick easy alignment of pipe where the variation in inside diameters is relatively great. Chamfered NUBS allow close tolerance fit-up and CLEAN STRIKE OFF. The ROBVON NUB conforms to the diameter of weld rod. ROBVON rings are beveled to assure non-restricted fluid flow.

TYPE CC Designed to allow quick easy alignment of pipe where the inside diameters are slightly out of round. The welder has the choice of "STRIKING OFF" the NUBS or leaving them intact to be melted into the weld mass of the first root pass.

TYPE C Designed for precise close tolerance fit-up. Type "C" NUBS conform to the diameter of the weld root. The NUBS melt with the metal to give complete penetration and fusion.

Robvon also manufactures machined rings to customer's specifications
All fabricated solid machined rings x-rayed. Write for full information

ROBVON
BACKING RING COMPANY

675 GARDEN STREET ELIZABETH, NEW JERSEY

Crane Stop-Checks Mean Safer Boiler Operation

This valve cost-free for quarter century

Gate, globe, angle or stop-check—Crane steel valves are hard to beat for low-cost service on steam.

This is proved again on the installation at Scott Paper Company's West Coast Division at Everett, Wash. This Crane 300-pound stop-check has been on one of its boilers since the pulp mill was built in 1929. Working pressure: 250 psi at 450 deg. F.

Not until 1954 did this Crane No. 30XU valve need any repairs—after 25 years of steady operation with just routine maintenance. Now with new parts, it's ready to set another such record.

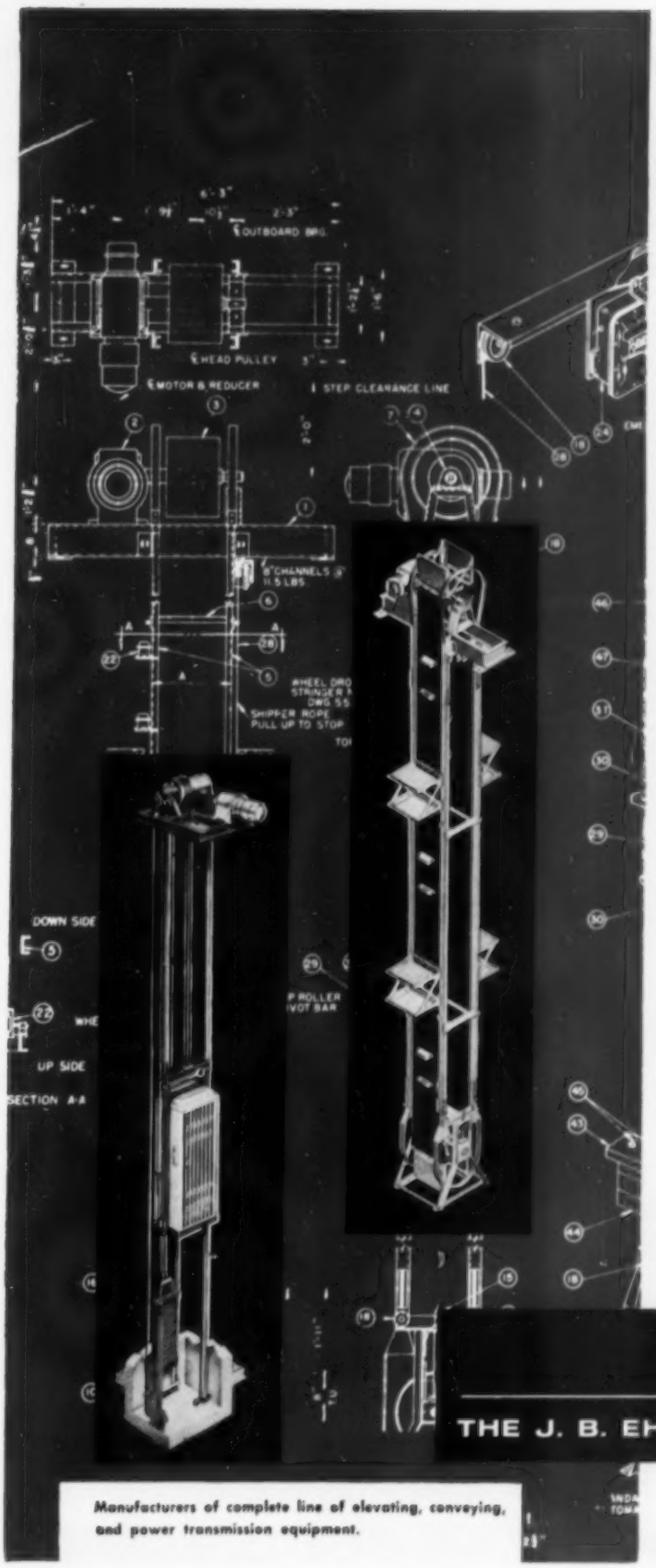
A single moving part: the disc—with chatter-free throttling lip—and effective disc cushioning—is one of the many reasons why Crane stop-checks have racked up this kind of service record in installation after installation. Ask your Crane Representative for full details, or write to address below.

IDEAS FOR YOU in this free book of "Valve Performance Facts." Your Crane Man has a copy for you.

CRANE VALVES & FITTINGS

PIPE • PLUMBING • KITCHENS • HEATING • AIR CONDITIONING

Since 1855—Crane Co., General Offices: Chicago 5, Ill.—Branches and Wholesalers Serving All Areas



Modernize with EHRSAM Electric Elevators and Belt Manlifts

Safe, low-cost installation and operation that will improve employee efficiency up to 50%. This inter-floor transportation is economical for any plant with two or more stories.

All components factory assembled and pretested for easy installation. Standard speed of Electric Elevators is 90 ft./min.; for special applications speeds of from 50-120 ft./min., are available. Standard speed of Belt Manlifts is 75 ft./min.; for special applications speeds of from 50-80 ft./min., are available.

Ehrsam Electric Elevators and Belt Manlifts conform to the requirements of the American Standard Safety codes, all local and state codes.

ELECTRIC ELEVATORS

Push-button, car-type for 1 to 6 passengers. Easy to run, inexpensive to install and operate.

BELT MANLIFTS

Step-on type vertical endless belt manlifts for simultaneous traffic in both directions.

WRITE/WIRE/PHONE FOR ILLUSTRATED BROCHURE AND LIST OF EHRSAM CUSTOMERS

"Over 80 Years of Dependable Service"

EHRSAM®

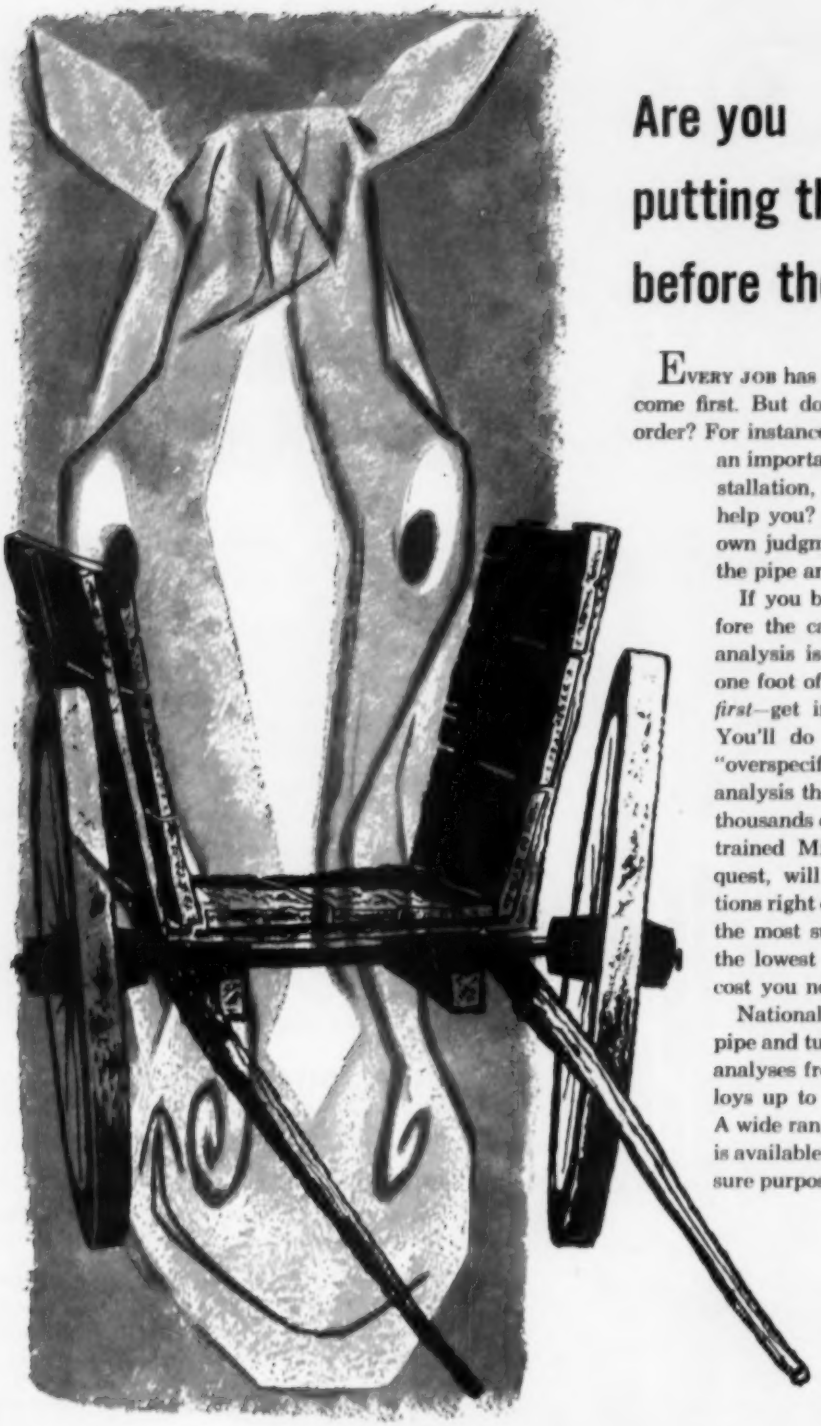
THE J. B. EHRSAM & SONS MFG. CO.

DEPT. E • ENTERPRISE, KANSAS

DISTRIBUTORS IN MAJOR CITIES

SALES OFFICES: Atlanta, Georgia; Denver, Colorado; Kansas City, Kansas
WEST COAST: Ehrsam Pacific, Inc., Riverside, California

Manufacturers of complete line of elevating, conveying, and power transmission equipment.



Are you putting the cart before the horse?

EVERY JOB has a natural sequence—first things come first. But do we always do things in that order? For instance, if you have to order pipe for an important, and probably expensive, installation, do you call in the experts to help you? Or do you rely solely on your own judgment, and go ahead and specify the pipe analysis you think is right?

If you believe in putting the horse before the cart, you'll want to *know* your analysis is exactly right before you buy one foot of pipe. You'll do the *first* thing *first*—get in touch with National Tube. You'll do this because you know that "overspecifying" (ordering a costlier steel analysis than the job calls for) can waste thousands of *your* dollars. Our technically trained Mill Service Force, at your request, will then analyze your specifications right on the job, and will recommend the most suitable material for the job at the lowest cost to you. This service will cost you nothing.

National Tube manufactures seamless pipe and tubes in a complete range of steel analyses from low carbon through the alloys up to and including stainless steels. A wide range of sizes and wall thicknesses is available for every mechanical and pressure purpose.

NATIONAL TUBE DIVISION, UNITED STATES STEEL CORPORATION, PITTSBURGH, PA.
(Tubing Specialties)
Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
United States Steel Export Company, New York

NATIONAL SEAMLESS PIPE AND TUBES

UNITED STATES STEEL

NEW

Introducing a unique concept of induced draft equipment design

CLARAGE TYPE DN DYNACURVE FANS

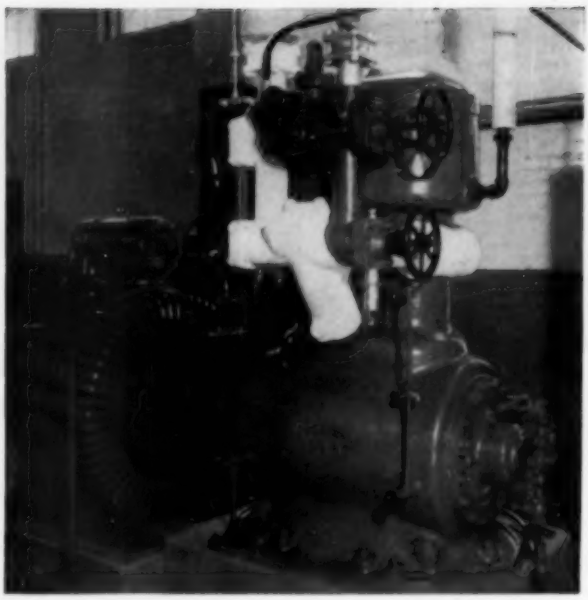
You'll find this new Clarage product has many advantages in store for you. For example: Minimum floor space and height requirements . . . Low first cost, installation cost, and operating cost . . . High efficiency over a wide performance range . . . Fan wheel built with 36 aerodynamically curved blades and tapered rims . . . Exceptionally rugged construction fully equal to the most exacting assignments. Obtain full information on Type DN Dynacurve Fans. Write today for Catalog 905. CLARAGE FAN COMPANY, Kalamazoo, Michigan.

CLARAGE . . . *dependable equipment for making air your servant*

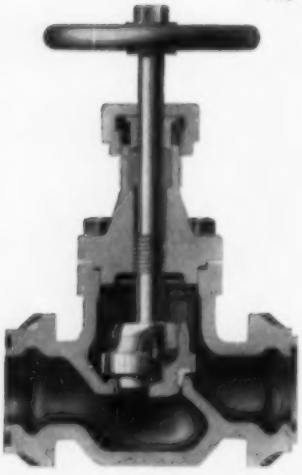
SALES ENGINEERING OFFICES IN ALL PRINCIPAL CITIES • IN CANADA: Canada Fans, Ltd., 4285 Richelieu St., Montreal

For the Ultimate in Ammonia Equipment Specify

FRICK TRADE MARK

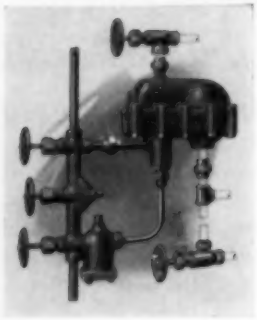


Frick Enclosed Ammonia Compressors—The Standard of the Refrigeration Industry →

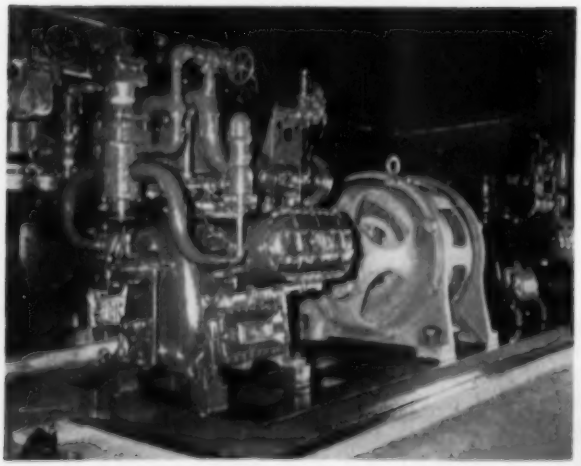


Frick Valves Have High-angle Seats and Oversized Stems, Are Good For Many High-Pressure Jobs

Condensers, Coils and Coolers Are Furnished in All Types and Sizes



Float Control Valve with By-pass Manifold and Strainer



"ECLIPSE" Ammonia Booster and High-Pressure Machines Have Multiple Cylinders, High Running Speeds

Whether you need a compressor, condenser, cooler, coil or control—you get only the most dependable when you insist on equipment bearing the Frick trademark. Generations of experience with ammonia refrigeration are back of our recommendations and products: write for literature and estimates on your requirements.

DEPENDABLE REFRIGERATION SINCE 1882

FRICK CO.

WAYNESBORO, PENNA. U.S.A.

Also Builders of Power Farming and Sawmill Machinery

News (Continued)

New Directors—Southern Industrial Relations Conf.

C. R. Younts, chairman of the board of the Plantation Pipe Line Co. of Atlanta, Georgia, was re-elected chairman of the board of directors at the recent 38th annual meeting of the **Southern Industrial Relations Conference** at Blue Ridge, N. C.

Mr. Younts, a prime force in the development of this conference to its present size of 1,100 delegates representing over 340 industrial organizations in the South, announced the election of the following Southern industrialists to three-year terms as members of the 28-man board of directors.

Guy B. Arthur, Jr., president, Guy Arthur & Associates, of Toccoa, Georgia.

Henry G. Chesley, Jr., president, Wilson Paper Box Co. of Richmond, Virginia.

T. H. Davis, president, Piedmont Airlines, Winston - Salem, North Carolina.

John Harden, Vice President, Burlington Industries, Inc., of Greensboro, North Carolina.

W. Gaines Huguley, president, F. W. Poe Manufacturing Company of Greenville, S. C.

D. G. Macdonald, personnel manager, E. I. du Pont de Nemours and Company, Chattanooga, Tenn.

Stuart Saunders, president, Norfolk & Western Railway Company, Roanoke, Virginia.

Howard L. Shannon, division manager, Florida Division, Food Machinery & Chemical Corp., Lakeland, Florida.

Buel B. Warren, director of public relations, American Cast Iron Pipe Company, Birmingham, Alabama.

Appointed to fill a 1-year unexpired term was **Francis Kelley** of the Union Bag-Camp Paper Corporation, Savannah, Georgia.

Oliver Clark, vice president of the Southern Natural Gas Company of Birmingham, Alabama, was appointed to fill a two-year unexpired term.

The conference, first promoted by the National Committee of the YMCA, has been dedicated since 1920 to promoting better human relations in Southern industry.

(Continued on Page 34)

Marley
Open Gravity Distribution
so simple, so logical, so effective

Water seeks a lower level. Hot water distribution on Marley Cross-Flow cooling towers is just that simple, and the advantages of this fundamentally sound system are many.

It is the only method that gives the operator control of the tower. At a glance, he can observe flow in each basin, and the balance between basins. He can change the flow in any cell at will and have positive knowledge of the result — immediately.

No internal piping, no flumes, no spray nozzles, no splash plates, no friction are other advantages.

The logical location of the distribution system is in a position where it offers absolutely no obstruction to air-flow and that's where Marley design places it. The location makes it adaptable to side inlet piping with individual supply for each cell or longitudinal manifold with outlet for each basin.

Gravity discharge orifices are on such close centers that there can be no dry areas, no overloaded areas in the Marley cooling chamber. This means effective heat transfer in every cubic foot of the efficient filling.

The Marley Company
Kansas City, Missouri

MARLEY

Founder Member of Cooling Tower Institute

NOW....10-week shipment of

MORE TRANSFORMERS*

SEALED DRY-TYPE transformers, rated 300 to 2000 kva, 15 kv and below, are virtually maintenance free. Ideal where atmospheric problems exist.

General Electric RM medium transformers

If your new or modernized plant power system calls for transformers 501 to 7500 kva, 69 kv and below, you'll benefit by faster shipment from General Electric. These RM medium transformers are currently being shipped in only 10 weeks from order date.

Standard-design transformers plus the General Electric repetitive manufacture process make possible this fast shipment. Standardization eliminates engineering and design time required for special units. Repetitive manufacture brings highly efficient production-line techniques to transformer production.

You benefit from standardization without sacrificing versatility. Voltage ratings and optional features are available for most industrial needs.

MORE RM MEDIUM TRANSFORMER BENEFITS:

Faster delivery is only one of the outstanding benefits you'll receive. Here are more:

Reduced maintenance, longer life—control-center arrangement of indicators, full-drain feature, and many other features help minimize routine inspection time. Quality materials, plus continuous quality control during manufacture, assure greater reliability on the job.

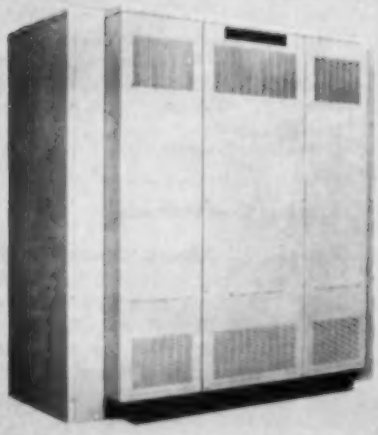
Faster, less expensive installation—shipped completely assembled, RM medium transformers have features such as ski-tip bases, extra jacking space, and reversible junction boxes which can cut installation time to only four hours.

Before you buy a medium transformer, contact your nearest General Electric Apparatus Sales Office. You'll discover how faster shipment, easier installation, reduced maintenance, and longer life add up to more for your transformer dollar. General Electric Company, Schenectady 5, New York. 416-13

Progress Is Our Most Important Product

GENERAL ELECTRIC

FOR INDUSTRIAL USE FROM THE COMPLETE GENERAL ELECTRIC LINE



OPEN DRY-TYPE transformers, rated 300 to 2000 kva, 15 kv and below, are used in clean, dry, indoor locations where weight or floor space problems exist. Light enough to mount overhead!

LIQUID-FILLED transformers, rated 112½ to 500 kva, 15 kv and below, conveniently and economically supply small blocks of power. Outdoor units are oil-filled; indoor, Pyranol†-filled.

†*Reg. Trade-mark of General Electric Co.*

**These same transformers are also incorporated in General Electric's outstanding line of load-center and distribution-center unit substations.*

News for the South & Southwest (Continued)

Gulf States Paper — Ala.

Jack W. Warner, President, **Gulf States Paper Corporation,** has announced the appointment of **Homer Humble** as Director of Employee Relations.

Mr. Humble first became connected with the paper industry in 1930, when he accepted employment in International Paper Company's Converting Mill. In 1940, he became associated with the International Brotherhood of Pulp, Sulphite and Paper Mill Workers as a representative in organization work, negotiating labor agreements, and handling grievances.

Choose from the improved DH Line of Dean Hill horizontal turbines which give you up to twice the power of earlier models while maintaining the same economy of operation.

The major change contributing to this tremendous power increase is the addition of steam nozzles to all models. On types now built with two nozzles—DH-10, DH-15, DH-20, DH-25—this change has meant *a 100% increase in the maximum horsepower of each unit!* On new three-nozzle models—DH-30, DH-35, DH-40, DH-45—the rated increase in maximum horsepower is 50%!

Why not get the complete power picture of Dean Hill's improved DH Line of horizontal turbines? Write today for Turbine Catalog, No. 500.

DEAN HILL PUMP COMPANY
Pump and Turbine Engineers Since 1893
Indianapolis 7, Indiana

OFFICES IN PRINCIPAL CITIES

Cambar Purchasing Agent

The appointment of **Frank H. Venters** as Purchasing Agent for the **Cameron & Barkley Company,** the Southeast's largest distributor of machine tools and industrial supplies was recently announced by Rufus C. Barkley, President.

Mr. Venters comes to Cambar after five years as Assistant Purchasing Agent with Dan River Mills, Inc., Danville, Va. Previous to that, he was Branch Manager for the Taylor-Parker Co., mill and supply house.

Mr. Venters will locate at Cameron & Barkley's new executive offices in the Barkley Building, Jacksonville.

Oakite—Carolinas

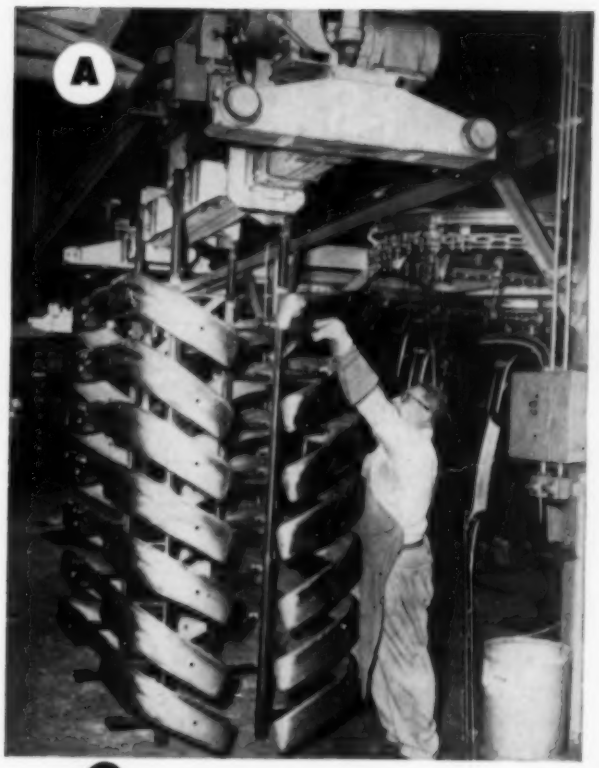
Oakite Products, Inc., manufacturers of industrial cleaning, descaling, and metal treating materials have announced the appointment of two new representatives—**James E. Davenport** at Rocky Mount, North Carolina; and **S. Hampton Coleman** at Asheville, North Carolina.

Synthane—Southwest

Frank C. Abbott, formerly technical sales representative for Reichhold Chemicals and Bakelite, has been appointed Texas - Oklahoma sales representative for the **Synthane Corporation** of Oaks, Pa., leading manufacturers and fabricators of laminated plastics.

Mr. Abbott is replacing F. C. McCamly, who recently retired after 21 years of service with the firm.

(*Continued on Page* 102)



AMERICAN MONORAIL

teams with *Udylite*

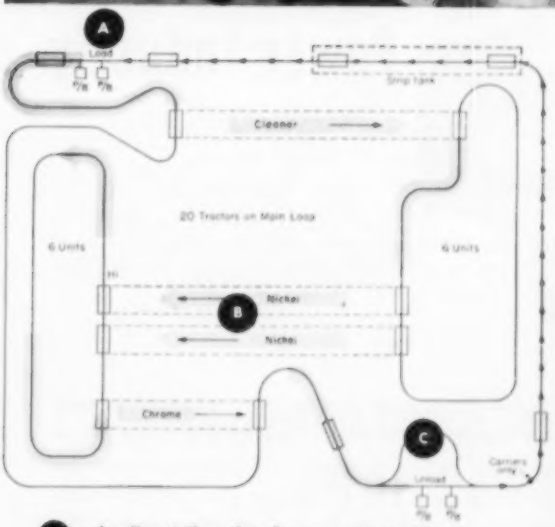
plates auto bumpers at Rheem Automotive plant

Combined engineering skills resulted in substantially reduced handling costs for the plating of auto bumpers at the new Rheem Automotive plant at Fullerton, California.

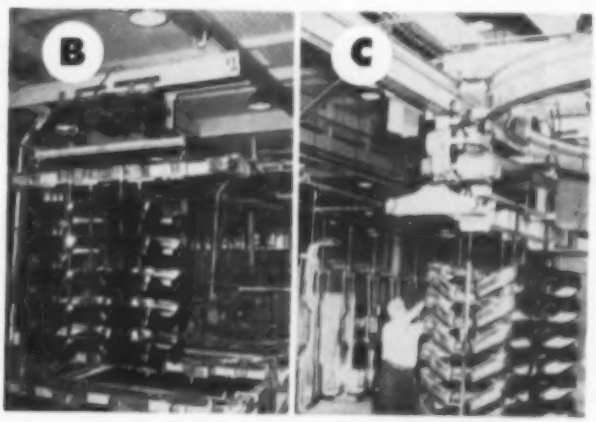
32 American MonoRail automatic dispatch units move special Udylite bumper carriers on three monorail systems with 14 drop sections to maintain continuous automatic plating.

Let American MonoRail engineers combine to solve your handling problems.

Write for Bulletin C-1.



A— Loading station where bumpers enter system.
B— Bumpers move through nickel tanks.
C— Inspection and unloading station.



Member of Materials Handling Institute and Monorail Manufacturers Association

For Power Driven Conveyors, Use Landahl Chainless Conveyors

AMERICAN MONORAIL COMPANY

13105 ATHENS AVENUE, CLEVELAND 7, OHIO (IN CANADA—CANADIAN MONORAIL CO., LTD., GALT, ONT.)

Since 1875 Chapman Valves for the Power Industry

Cross section of special Chapman Valve of the type used on the primary coolant loop of the first atomic submarine, the Nautilus. Operates at 2000 lb. pressure at 600°F.

Since the days when a 300 pound steam valve was considered an important development, the Valve Industry has added many higher standard pressure ratings. New and special valves have also been developed and built by Chapman, including primary coolant valves for the Nautilus; Mark I and II; A1W and S5W Valves for the first large ship reactors; valves for the Dresden reactor; and many others.

Chapman Valve, since its organization in 1875, has kept in step with developments in the Power Industry; meeting promptly and efficiently the demands for valves to withstand increased pressure and temperature specifications. The Chapman line today covers a complete standard range to 2500 lb. and special designs for super-critical pressures.

Keeping pace with the Power Industry . . . keeping pace with all industries . . . has kept Chapman alive and aggressive. Every phase of manufacturing is under close supervision. Chapman foundries manufacture its casting requirements under technical supervision with results checked by a million volt x-ray machine to insure a maximum quality product. All Chapman equipment and operations are designed to meet exacting demands with valves that give top performance with the lowest maintenance cost.

The CHAPMAN Valve Manufacturing Co.

INDIAN ORCHARD, MASSACHUSETTS

TIMELY COMMENTS

Versatility in the Plant

THERE IS an urgent need for versatility among plant employees. Operators that came up in the old plants and learned to recognize smoke and squeaks and vibration as trouble signals also learned to take corrective measures quickly, even if the proper tools and supplies were not at hand.

Lack of instrumentation and automatic controls required intimate contact with the equipment. Generally, someone knew what to do. Fans, hoses, 2 x 4's, wire, and sledge hammers were put to odd uses, but generally production was continued with little help from specialists.

Modern equipment complicates training. To develop real skill and versatility is harder now than in the past. We not only have fewer operators, but their opportunity to practice what they are taught is rare. They may stand and watch for weeks or months without any interruption to the orderly operation of machines on automatic control. Then a nut comes loose or a wire shorts out — and bang.

Plant operating personnel cannot be expected to understand the intricacies of automatic controls but they can learn to spot trouble and push the right button before a smash-up comes. And they can learn the importance of these enemies in the maintenance department. Most big troubles have humble beginnings — rust, wear, dirt, vibration, etc. We learn the importance of these enemies in the maintenance department.

Operator training programs should include a stretch in the maintenance gang. That's where a plant man learns the feel of equipment and tools. That's where he learns to act quickly when something goes wrong. That's where he learns to prevent failures that would require quick action.

Diversification in Industry

THE INDUSTRIAL growth of the South in recent years has not been occasioned alone by the transfer of old production facilities into the Southern states. Certainly, there has been some of this, but by and large, the great development has been in industries producing new products.

Many of these products were not in existence even ten years ago, a short period of time in economic history. Since their inception in fine new industrial plants with a willing and eager labor force, they have been able to build and make secure markets in all sections of the country.

Many localities and regions have learned to their deep regret that dependency upon one industry is rather precarious to the health of the community. As in the field of investments, the greatest degree of safety in economic storms lies in diversification.

Plant management, already established in a community and serving on business association committees, can do a great economic service by constantly reviewing potential new industries and new products with a view toward developing greater diversification of local economic conditions.

NEW USE FOR GRATING -- SUN SHADES FOR MODERN SCHOOLS

Light aluminum grating for SUN SHADES on schools is in perfect harmony with modern school design — allows 80% passage of light and air without the accompanying penetrating rays of the sun. Because they are aluminum they are maintenance-free. Furthermore, they provide a permanent working platform for easy access to windows.

Only the finest precision manufacturing would satisfy the architect who designed the school shown here. BORDEN is recognized as a leader in quality custom-manufactured gratings, in ferrous and non-ferrous metals.

Other uses for grating in school design: Areaways, boiler rooms, laboratories, gridiron catwalks in auditoriums and gymnasiums, footscrapers and window guards.

Write for complete
information on BORDEN
All/Weld, Pressure Locked, and Riveted Floor
Gratings in this FREE 8-page catalog

BORDEN METAL PRODUCTS CO.

853 GREEN LANE Elizabeth 2-6410 ELIZABETH, N. J.
SOUTHERN PLANT—LEEDS, ALA. — MAIN PLANT—UNION, N. J.

BORDEN METAL PRODUCTS CO.

Gentlemen:

Please send me BORDEN Catalog AT254

NAME .....

TITLE .....

COMPANY NAME .....

ST. AND NO. .....

CITY AND STATE .....

INDUSTRY SPEAKS

You Gave Us The Idea

NINE YEARS AGO you told us you wanted from-the-plant articles showing how other plant engineering personnel in Southern industry are improving production and lowering operating and maintenance costs.

Consequently, for nine consecutive years SPI's Annual BETTER PRODUCTION Issue has consisted of case studies direct from Southern and Southwestern plants. You gave us the idea and each year you report on how-you-did-it. Other plant engineers profit from your experience and at the same time you find out what others are doing.

Articles provided for SPI's 10th Annual Better Production Issue in October show how excellently engineers have cooperated. Tampa Electric Company's new coal unloading tower is described. It incorporates a *rope reeving system* that promises to increase production by reducing the number and extent of shutdowns required to replace wire rope used for hoisting and closing the 6½ ton bucket. The new reeving system utilizes a single continuous rope for both hoisting and closing.

International Harvester's Memphis plant recently installed *magnetic separators* on all centerless grinders for the separation of metal particles from the coolant. Six separators cost about $3,000 and annual savings will run over $4,000. They have cut down on use of coolant by 50% and save 10% on number of grinding wheels replaced.

In Lake Charles, La., the Cit-Con Oil Corporation receives bulk lime in closed hopper type railroad cars. It is unloaded into cyclindrical tanks which have a conical bottom and a control valve at the apex of the conical bottom. Difficulty with packing and caking in the conical bottom was experienced. Trouble continued after all possible points of rain water leakage were sealed. It was theorized that the moisture in the air that came from outside the tank when lime was withdrawn was causing condensation that resulted in caking.

In SPI's October issue, Cit-Con plant engineering personnel will show how they ran a ¼" tube from a dried air supply line to the top of the storage tanks. The small "bleed" of dried air keeps a slight pressure on top of the lime in the tank, preventing intake of moist air.

Over $12,000 annual savings in *fuel costs* at Talon's North Carolina plant have been obtained. Waste heat reclaimed from hot waste dye liquor with a heat reclaimer and accumulator tank did the trick . . . overhead interferences at Lockheed's Georgia Division prohibited use of continuous rows of lights so plant engineering personnel used *plug-in fluorescent fixtures . . . Feedwater treatment costs* have been cut 50% at Olin Mathieson's Kentucky plant. Switch to non-flammable hydrazine as an oxygen scavenger paid off.

These, plus 50-60 other "Plant Case Studies" will be featured in October, showing how Southern industrial plants are getting better performance because of improvements in power and steam generation, piping & accessories, manpower utilization, instruments and controls, lubrication, lighting, etc.

Reader's comments will be invited. Some will offer still better solutions, better methods — and these will all become a part of SPI's continuous effort to encourage BETTER PRODUCTION.

Job communications would help this welder talk and write about welding equipment, materials of construction, welding methods, safety hazards, safety clothing, and many other points of job interest. Soon he would be bragging a little about his company and the job he is doing to make it great. A proud worker is a good worker, and he makes money for his company and earns a good pay check.

PEOPLE HEAR what they want to hear, and see what they want to see . . . unless they are shocked out of their own patterns by something overpowering.

When the labor boss tells his crew that the company is exploiting, he finds many more receptive ears than when the company says the union is out to make trouble. When a fellow worker pats his friend on the back and puts the blame for rejects on poor company supplied equipment, he finds much stronger support than when the supervisor puts the blame on carelessness or indifference.

Communications?

In order to fully understand why people aren't listening when we talk, it is necessary to know what is meant by communications. Although the general meaning of communications is to impart or to transmit, I much prefer a very old definition which appeared back in the year 1731. It defines communications as "the act of opening in to each other."

Contrast this definition with the common concept of merely passing along information. You will note that it assumes an identification between the parties involved and an interchange involving both giving and receiving. This is the true concept of communications.

Sending

Let us pause for a moment and review the most common aspect of communications — the sending aspect — and ask ourselves what tools we have at our disposal for getting across our messages.

The main tools of communications which are considered useful in sending are — 1. people (face-to-face), 2. written memoranda, 3. letters, 4. job specifications, 5. posters, 6. booklets, 7. house organs, 8. telephones, 9. bulletin boards, 10. advertising media such as newspapers, magazines, radio and TV.

The world has made tremendous strides in the development of tools for reaching mass audiences and for passing along ideas through the spoken and written word, as well as through the whole field of graphic arts. We can send by word, by photos, by color, by touch, by smell, by every conceivable method and variation.

Receiving

But let us look now at the problem of receiving the message, the other aspect of communications. The football coach spends as much time with the end or halfback trained to receive the pass as he does with the player who does the passing. How do we stack up in this regard? What tools do we have to assure receipt of that which is sent? In reality there are only four elements:

1. The senses, primarily sight and hearing
2. The ability to read
3. The ability to remember
4. The ability to interpret or understand

I wonder how many of you have spent any time at all in helping your employees to see or hear more clearly, to be more observant and aware, more selective, to read more rapidly and more intelligently or to understand more thoroughly. How many of you have provided memory training or have taken the time to test whether or not your messages are getting through and are being understood.

Perhaps you are wondering why, if people hear what they want to hear and see what they want to see, we should spend the time and money training their abilities to receive. The answer to this is not simple. It is tied up with my belief that there is a way of identifying our company message with the employee's interest. Our communications will be much more effective if our audience is trained in the tools of receiving. Money invested in the tools of receiving is bound to increase the acceptance of worthwhile messages.

Job Communications

By GEORGE BLACK

Industrial Public Relations and Management Counsel
Jacksonville, Florida

I should like to make it clear that these tools in themselves do not provide the answer to the problems of communications, they merely assist in getting our message through. The problem must be met in terms of building the desire to listen. It is only then that our efforts at communicating really pay dividends.

Research and Testing

Thanks to the tremendous advances which have been made in the fields of research and testing it is now possible to find out just how successful we are in transmitting a message. I am sure that your own personnel departments are aware of the studies and the tools which are available, so we need say little more about them. But I would like to caution about the harm which can come from the misuse of tools designed for mass testing and sampling.

We are becoming a nation of poll takers and too often have attempted by random sampling to predict the action of a group. The accuracy of these techniques when applied to who will be elected, to whether women prefer short or long dresses, to what colors will be most in demand, or even to what people are thinking, may be indisputable as long as we remember that we deal with masses.

Unfortunately, these techniques of mass testing fail miserably when interpreting the actions of individuals. For example, when statistics tell us that in a certain community the average is 1⅓ cars per family, we accept it and repeat it without stopping consciously to realize that nobody owns half a car. There is no such thing as 1⅓ cars in any family. We don't know how many people have two cars, how many people have one car, and how many people have to walk. The big mistake we tend to make today is to deal in averages, in statistics, and to equate men with machines.

Individuals

Men are not machines; they are individuals, and as individuals they are not predictable, except perhaps by trained psychologists on the spot. What a man feels today he may not feel tomorrow; and an unkind word from his wife as he leaves the breakfast table can toss the supervisor's friendly "good morning" into the wastebasket. When we approach the problem of communications in terms of averages and statistics and ignore the individual, we are treading on a mighty fine tightrope.

Here, then, is the crux of any sound approach to the communications problem; the recognition that we are dealing with individuals rather than with a mass, and that we must work to create a climate of desire — a receptive soil — before true communications can be achieved. We must make up our minds that we have an educational job to do; that we must set the stage so that the employee learns from his own experience and finds the truth in what we are saying by actually identifying himself with his work and with his company.

We have been very busy measuring our own success in terms of dollars and cents and in teaching our employees to measure their success the same way. We have been systematizing the job; mechanizing operations, buying hands and feet at so much per hour, and not worrying too much about mental differentiation.

Before we can really communicate, we must create a personal sense of responsibility for each man in his job. We must help to build a man's life about his work — as it was in olden times, and as it still is in the great body of professional men and women.

Pride

We must build a pattern so that the individual is once again proud of what he is doing, fully understands it, talks about it, and gets recognition for it.

The $64,000 question is how do we go about building such a pattern. Psychologists have cried, "Deal with a man in terms of

Job Communication (Continued)

his own interest if you want to succeed." And what are these interests? From the looks of the ads for recruiting workers they seem to be:

1. MONEY — Surely this is what he wants. Talk to him in terms of how much per hour he can make.
2. EASY WORK — Make his work place pleasant, enjoyable, easy, keep him rested for the leisure time that follows the day's work.
3. SHORT HOURS and Long Vacations — Keep his eye on that new car, the new boat, the new home — to enjoy them he'll want a short working day and long vacations.
4. SECURITY & BENEFITS — Steady work is essential to his well-being — load him with fringe benefits to keep him happy.

Poll after poll has been taken of the workmen to prove the validity of these interests or drives. But in spite of the millions spent in catering to their interests, workers are not happy and communications are weak. The reason: Our concept of the workers' interests is a false one.

The propaganda mill has led us to believe that workers are shallow — interested in everything but their work. If this be true, we have made it so, and we can unmake it! If this be true it is an artificial interest and can be replaced by a more realistic and lasting one.

Before pursuing this further, let's turn the table and look on the other side. What are the interests of management: 1. Production, 2. Accuracy — or minimum of rejected material, 3. Safety, 4. Cost-cutting.

The apparent gap between these two lists of major drives and interests has been used by many as proof-positive that labor and management can never really get together and must always, in one way or another, be at each other's throats. This I cannot accept!

It is my belief that the spiritual drives are stronger than the worldly — that if you can help a man to be proud of what he is doing, to feel that he is needed, to secure recognition for the work that is being done, the result will be a careful, reliable and satisfactory worker.

I am convinced that by placing the emphasis on this combination of drives and interests we will be equating management interests in production, accuracy, safety and economy with true employee interest.

Let's Get Specific

Thus far, we have been using words. We have been talking ideas. It is time now to get specific, and to ask how we should go about setting up such a program.

In job communications we start with Mr. X and we ask ourselves some questions:

1. Who is he — name, age, background, honors, etc.
2. What is his job?
3. What skills does he have?
4. What machines or equipment does he use?
5. What training did he need?
6. What are the limits on his responsibilities?
7. How does his work mesh with others in the same department; in other departments?
8. What can his work mean to customers?
9. What trade magazines cover his job interests?
10. What societies cover his job interests?

Then we say to ourselves — What do we want this man to know about us? These are the major things:

1. Who we are — name, age, history, etc.
2. What we do — our products.
3. Why we do it — our customers.
4. Our competition.
5. Our relative position in the industry.
6. Our responsibility to employees, to the community, to customers.

The next step is to get the information about Mr. X and ourselves down in black and white.

Now comes the major aspect of the job communications program — its attempt to use the individual job as the nucleus about which to build a feeling of pride. At the present time all our efforts are aimed at making a man forget work — almost as it it were something to be ashamed of. Under a job communications program a man's work becomes the basic interest — not the softball team, the bowling league or the Christmas party.

HERE IS WHAT TO DO:

1. Take full advantage of the psychological values inherent in letting a man talk about what he knows. Set aside time to "talk about the job." This can be done best through small group meetings of those with similar or related interests. The meeting should be organized and run by the supervisor (special training of the supervisor may be necessary for maximum benefits).

2. Teach Mr. X to talk freely to others — but the subject matter must always be the job. He can learn how to search his job for things to talk about.

3. Teach Mr. X to write about his job — to explain in written words the very things he's been talking about.

4. Teach the spiritual value of helping others with the same or related job functions by writing and talking about his own problems.

5. Teach Mr. X to read by encouraging discussion of new approaches and methods as reported in the trade journals or in reports by others and by your own men.

6. Arrange to get Mr. X and his department into print by providing written material for the trade journals based on these communication meetings. This is the big pride lifter and the beginning of a do-it-yourself public relations publicity program.

7. Arrange to get Mr. X and his department on the lecture platform before technical societies. This too lifts his pride and builds up the company.

8. Explore the possibilities of specialized training for supervi-

sors and workmen in reading, speech, memory and the other tools on the receiving end of communications.

This program is designed to build pride and respect in the individual — put back the feeling of craft in the job. Job communications can be the opening of new horizons for you and your company. And the interesting thing about it is that it doesn't have to be done all at once. It can begin slowly. Work with one department at a time and check results carefully.

The challenge to the company or to the individual supervisor is a great one. The object is to put meaning and understanding into the job lives of those who work for and with you.

Job communications can be the basis of a whole new way of industrial life which I sincerely believe will mean better public relations and better employee relations for those companies with the courage, the foresight, and the stamina to set it in motion.

Richmond, Virginia . . .

Wirebound Packaging Cuts Costs

THE HISTORIC Tredegar Co. of Richmond, Virginia, saves the taxpayers a substantial sum every year by a change in packing practice bombs for the Navy.

Ray Krise, president of the company, said that 25 lb naval practice bombs are packed with overall savings that thus far amount to about $50,000 a year accruing at $20,000 a year.

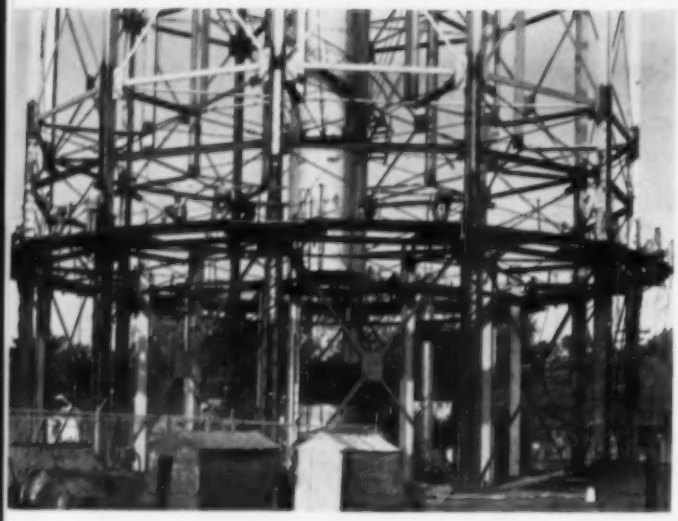
The bombs formerly were packed two to a heavy nailed wood box with nailed-in blocking and additional steel-strapping. Shipping weight was 63 lb. Despite the blocking and use of heavy lumber, the delicate fins of the bombs sometimes were damaged during shipment and handling.

In September, 1954, the Tredegar Co. converted to the use of wirebound boxes after exhaustive laboratory tests showed them to be better able to withstand severe handling and to permit stacking up to over 170 high. "Trial runs" demonstrated further that they would be much easier and faster to pack and unpack. Shipping weight was cut from 63 to 56 lb, or 11%. Since storage space was at a premium, another important economy was the ability to store three times as many unassembled wirebound boxes before use as made-up nailed boxes.

The conversion to wirebound boxes for practice bombs has been completed at the historic old iron works with packing costs cut in half and shipping damage drastically reduced.

The wirebound box consists only of the one-piece wirebound blank, the two specially engineered ends, and a solid wood separator. No nailing is needed. The ends are held secure between parallel end

(*Continued on Page* 68)



OPERATION about two-thirds completed. Scaffold is 22 ft above foundation. Twelve 75-ton manually-operated jacks were positioned to seat atop each new outer column. Technique kept tower at maximum rigidity at all times to resist wind forces.

Rocky Mount, North Carolina . . .

Tank Jacked Up

416 Tons Raised 25 Feet

INGENIOUS methods were used by erection specialists at Chicago Bridge & Iron Company to "make a tall one out of a short one" for the water company of Rocky Mount, N. C. — without disassembling or moving to a new location the 416 tons of a 25-year-old Horton radial cone elevated tank 88 ft across and 100 ft to the bottom.

The million-gallon tank was actually jacked up to increase its height 25 ft. The basic procedure was (1) to erect close-fitting columns of box construction around the outside bottom columns of the original structure, (2) gradually inch the tank and its supporting structure upward using the new columns as sleeves, and (3) install a new 25 ft bottom panel by the addition of struts and diagonals to the new columns.

The job was done immediately after a new million-gallon Horton radial cone tank had been erected. Thus there was no interruption in city water service while the old tank was being raised. After the job both tanks could boast pressure heads in line with Fire Underwriter's recommendations despite the population growth of Rocky Mount during the past two decades.

Hoisting Technique and Sequence

First, an angle ring was fastened to the central riser about 25 ft above the foundation, temporary cables were run between this ring and the top of the outside columns (to support the riser and the central portion of the tank bottom) and the riser cut a short distance above its foundation. Thus it was not necessary to disturb connections, fittings, clean-out valve or manhole in the bottom section of the riser.

Next, each of the inside circle of columns was disconnected at the top of the first panel, leaving the bottom sections standing on their foundations and all of the upper inside panels hanging free. Then each outer column in the circle was cut loose from its base plate — *one at a time* — diagonals removed from it, and the new box columns constructed around it. New

EACH JACK STROKE raised structure 1/64th of an inch. Note height indicating gage, provided at each jack, to enable operators to keep structure precisely level and weight evenly distributed at all times.

bottom-panel struts and diagonals were installed as the cutting proceeded. At the same time lateral bracing was connected between the tops of the new sleeves and the inside columns.

When the complete ring of new bottom outer panels was finished, a scaffold was constructed about 22 ft above the foundation and twelve 75 ton manually-operated jacks positioned to seat atop each new outer column. The jacks acted upon lugs welded between the flanges of the original bottom panel columns. These lugs were moved and rewelded each time a jack approached the limit of its extension.

Twelve men operated the jacks in unison, each operator making a stroke in time with sound signals given by a supervisor. Approximately 19,500 strokes on each of the 12 jacks were necessary to raise the tank and tower the required 25 ft.

When about one-third of the lift had been accomplished temporary struts and diagonal rods were attached to the original outside columns. When two-thirds of the job was complete another such set of temporary struts and rods was installed.

The tank was raised 2 in. higher than the required 25 ft at the end of the job in order to permit insertion of new columns in the inside second panel. Thereafter the structure was lowered 2 in. to final location and the original outer bottom columns welded to the tops of the new outer bottom columns. All temporary struts and rods were then removed and replaced by the final diagonals.

After a new 25-ft section was added to the riser (and a new section of spiral stairway inserted) the job was ready for paint and service.

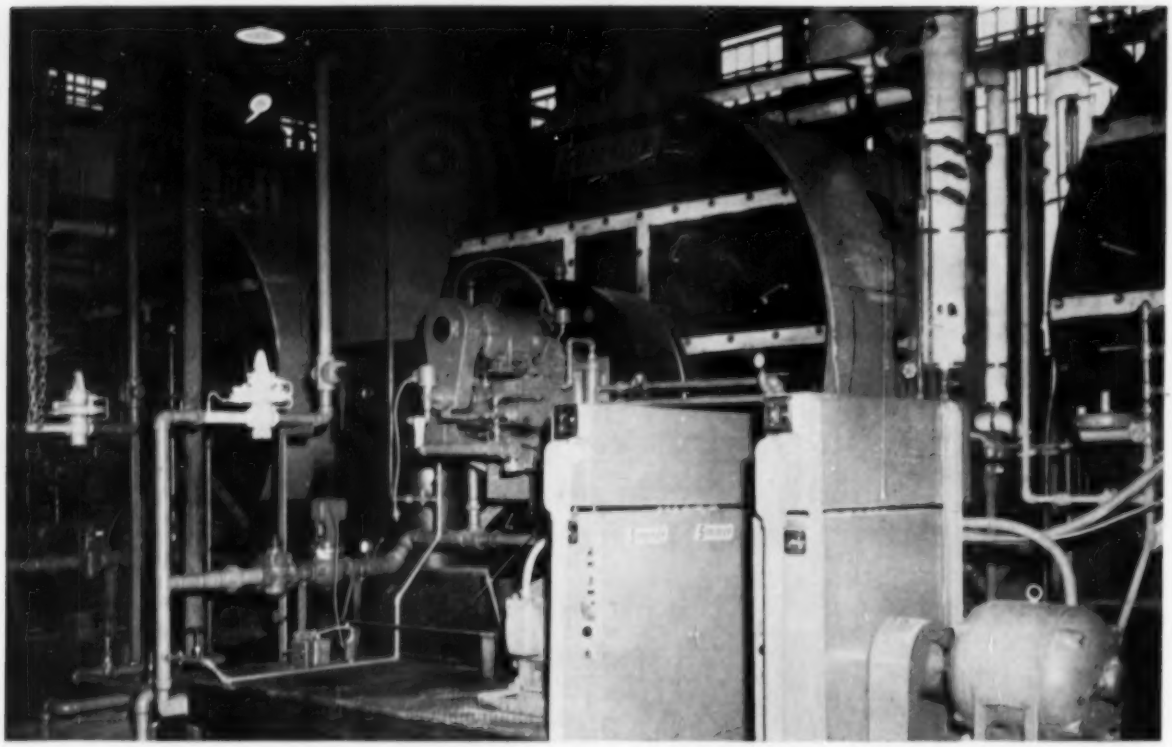
Pipe Friction Loss Pocket Calculator

A HANDY pocket slide calculator for figuring water pipe and paper stock pipe friction losses has been developed by Allis-Chalmers and is available at no charge to Southern & Southwestern manufacturing, process and utility plant personnel.

Data for computing water pipe friction loss are based on standards of the Hydraulic Institute and appear on one side of the calculator while those for determining paper stock pipe friction loss are on the other side.

Measuring 9¼ in. x 4 in., this practical calculator also carries a table of equivalent lengths of new straight pipe for valves and fittings for turbulent flow.

For your free slide rule, contact the nearest A-C office or write: Industries Group, Allis-Chalmers Manufacturing Co., Milwaukee 1, Wisc.



Boiler Plant Modernized and Expanded

Steam Capacity Quadrupled . . . Boilers Installed Without Shutdown . . . Same Stack

TO MEET the increasing steam demands of an expanding college campus, South Carolina State College at Orangeburg, S. C. recently completed an efficient boiler plant modernization and expansion.

In 1945 three HRT stoker fired boilers met a maximum steam demand of around 17,500 lb/hr. A few years later buildings under construction resulted in a 30% increase in steam demand and recently proposed buildings predicted an estimated load rise to around 52,000 lb/hr.

Equipment had to be selected to fit the size of the existing boiler house; standby capacity was necessary; and the new generating units had to be installed without plant shutdown, since the kitchen, laundry and other buildings required steam and hot water 12 months of the year.

New boiler plant, recently completed, consists of four 500 hp, 17,250 lb/hr 4 pass, 125 lb Superior Combustion gas-oil fired units. These are fully integrated units including boiler, burner and controls, each with boiler feed pump. All interconnecting piping and wiring is pre-assembled at the factory and units have factory applied insulating jackets. They have satisfactorily met the variable load conditions of the campus.

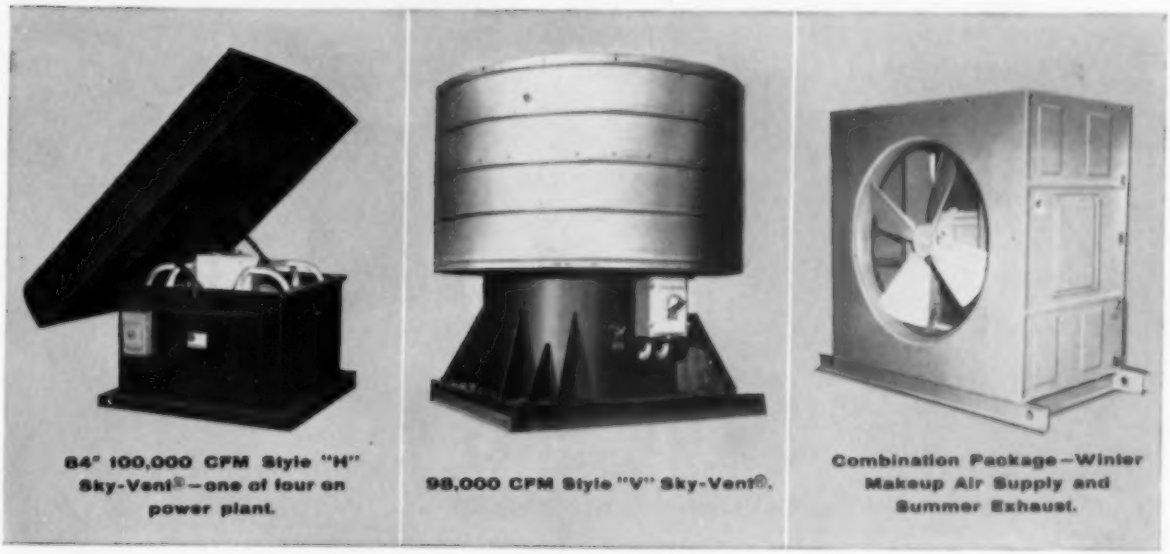
The Superior Combustion units are gas fired with No. 5 oil used as standby. Fuel oil storage capacity of two 25,000 gal tanks was provided. Boilers have dual pressure control and a time clock which automatically reduces pressure at night from the normal 100 lb daytime operation.

Republic flow meters, Milton Roy chemical feed pumps, Schaub deaerating feedwater heater, and other accessories were included in the extensive boiler plant modernization and expansion.

Consulting engineer for the South Carolina State College is *James W. Austin, Jr.*, of Atlanta and *D. M. Zimmerman* is Superintendent of Buildings and Grounds at the Orangeburg, S. C. campus. Architects for the job were *LaFaye, Fair, LaFaye & Associates* of Columbia, S. C.; Electrical Engineer was *Gerald Preacher & Associates* of Columbia; and the boiler installational contractor was *W. O. Blackstone & Co.* of Columbia. *H. L. McDowell*, V.P. of this firm supervised the installation of the four new boilers without plant shutdown.

Data Courtesy JAMES W. AUSTIN, JR., Consulting Engineer, Atlanta, Ga.

THREE PRACTICAL WAYS



84" 100,000 CFM Style "H" Sky-Vent®—one of four on power plant.

98,000 CFM Style "V" Sky-Vent®.

Combination Package—Winter Makeup Air Supply and Summer Exhaust.

TO VENTILATE AND/OR HEAT A BOILER ROOM—

"BUFFALO" PACKAGE ROOF VENTILATORS — "Buffalo" Sky-Vent® Power Roof Ventilators provide efficient, high-volume exhaust of large room areas. They take advantage of heat rise and require no ductwork. Complete, ready-to-install units with inlet, curb plate, stack and hood — rigid, sturdy and weatherproof. Write for Bulletin FM-2345.

FOR MAKEUP AIR — where fresh, heated air is needed to replace large quantities of air removed from the boiler room by the forced draft fans, "Buffalo" Propeller Fan Makeup Air Package Units offer an economical solution. These consist of non-freeze finned steam coils and high-capacity propeller fans in easy-to-install units — available, too, with filtered intake and by-pass dampers for economical summer cooling. Write for recommendations on your requirements.

"BUFFALO" PACKAGE PROPELLER FANS — These are heavy-duty units, delivered ready to mount in window or wall openings and start exhausting excess heat against pressures up to 1". Their high-efficiency 4-blade design permits slow-speed operation for low noise level and long life. In 24" to 120" sizes to give you capacities clear up to 250,000 cfm, "Buffalo" Package Propeller Fans are proving the most satisfactory answer for ventilating many large boiler rooms, both from the economy and the performance standpoints. Have us mail you Bulletin FM-2345.

The "Q" Factor — the built-in Quality which provides trouble-free satisfaction and long life.

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Canadian Blower & Forge Co., Ltd., Kitchener, Ont.
Sales Representatives in all Principal Cities

INDUSTRIAL EXHAUSTERS BELTED VENT SETS PROPELLER FANS "E" BLOWERS — EXHAUSTERS

Bernie Sanford (left), machinist, and O. O. Hill, apprentice, at work on the spindle.

Unusual Machining Job

By F. L. CLAYTON, JR.
Superintendent, Gadsden Steam Plant, Alabama Power Company

ANNUAL inspection, two years ago, revealed a bent spindle on the high pressure turbine of Number 2 unit of Alabama Power Company's Gadsden Steam Plant. To counteract the crook under normal operation, balance weights were added but considerable difficulty was experienced in bringing the unit up to speed. Other operating problems also resulted.

After a recent inspection, the decision was made to machine the spindle to remove the troublesome crook. The manufacturer's field representative advised transporting the spindle to a large lathe for the job since the manufacturer had had no experience in performing such a job in the field. The risk in transporting such a valuable part dictated that every effort be made to do the work in place.

By using the turbine casing as a lathe bed, one of the bearings could be used to support one end of the spindle in the normal manner. The problem of supporting the front end of the spindle, which weighs over 19,000 pounds, while it was turned with the other bearing removed, was solved by building two forms and pouring temporary bearings. One was between the high pressure dummy piston and the first stage wheel to carry the load and the other just behind the first stage wheel to carry the thrust.

Next, it was necessary to build a device for rotating the spindle at the proper speed for grinding and turning. This was done by borrowing a variable speed drive assembly from one of the idle coal feeders and using its sprocket drive, bolted to the coupling face.

The final step was to design and fabricate a special apron and ways for the lathe compound.

The maximum run-out (crook) on the spindle prior to the machining operation was fourteen thousandths of an inch and after machining it was less than five ten-thousandths of an inch.

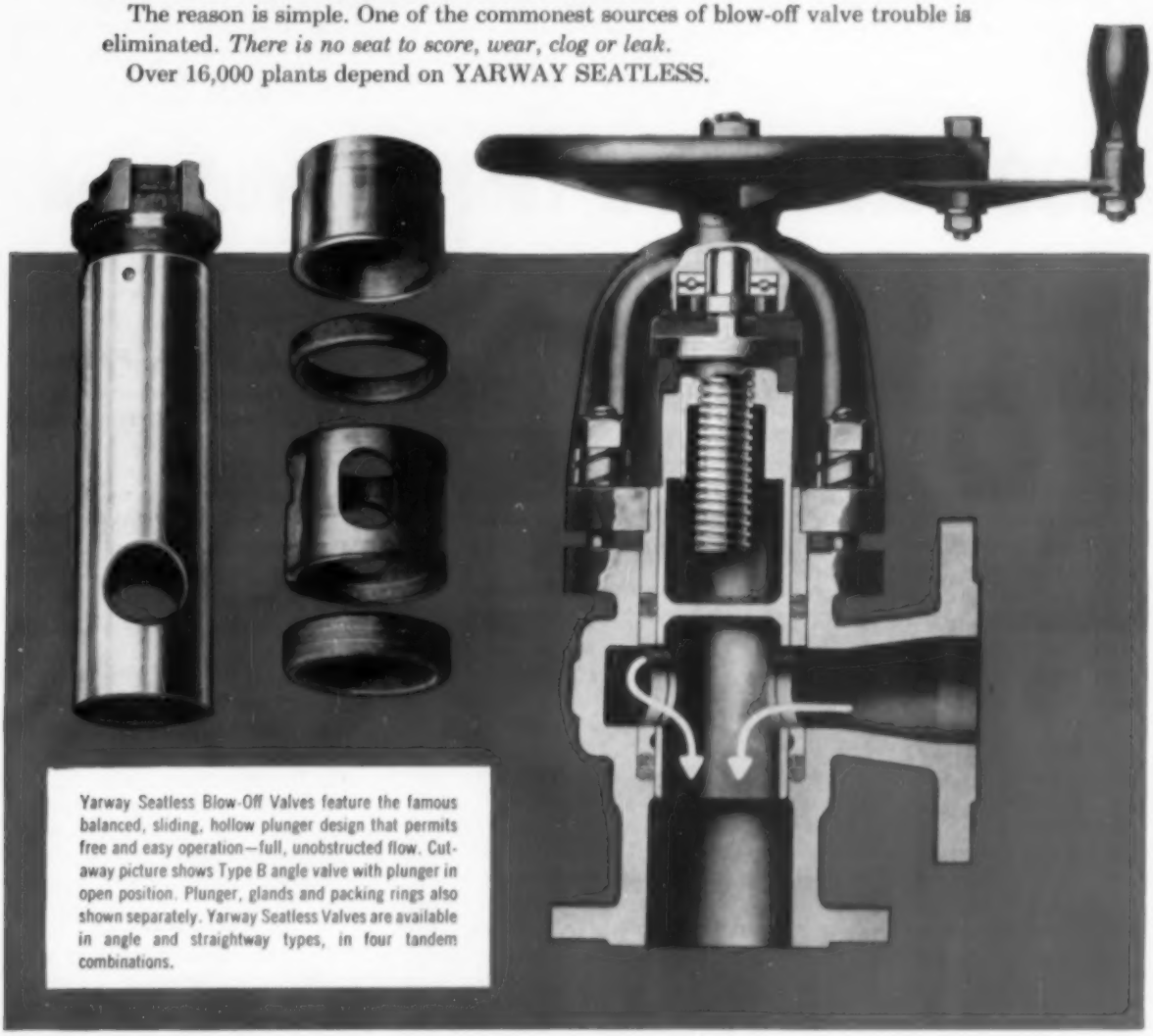
Members of the plant maintenance crew, all of whom participated in the unusual machining job are F. A. Howell, electrician; Berry Rutland, Jr., painter; James W. Sewell, helper; A. M. Wynn, electrician; G. H. Ballard, apprentice; Harry Boggan, welder; L. N. Davidson, maintenance foreman; C. H. Hughes and Donald Alford, helpers; Leon Shaw, mechanic; O. O. Hill, apprentice; Bernie Sanford, machinist; and George C. Baker, apprentice.

seatless
means savings

For nearly 50 years boiler plants in low and medium pressure ranges have been saving maintenance time and down-time thanks to dependable, trouble-free blow-down service from Yarway Seatless Blow-Off Valves.

The reason is simple. One of the commonest sources of blow-off valve trouble is eliminated. *There is no seat to score, wear, clog or leak.*

Over 16,000 plants depend on YARWAY SEATLESS.

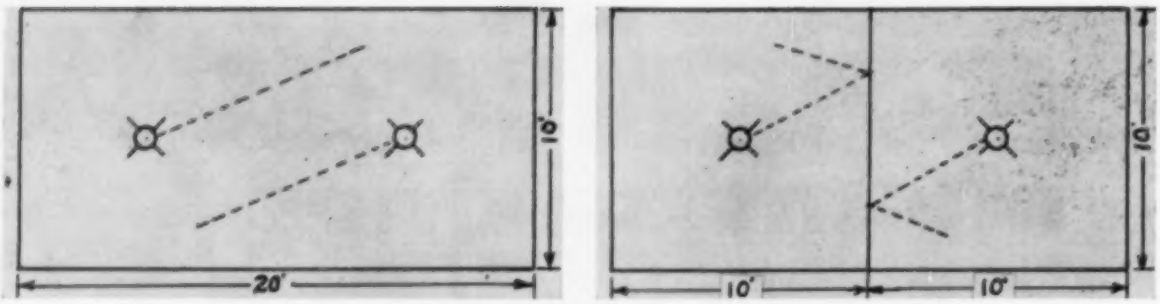


Yarway Seatless Blow-Off Valves feature the famous balanced, sliding, hollow plunger design that permits free and easy operation—full, unobstructed flow. Cut-away picture shows Type B angle valve with plunger in open position. Plunger, glands and packing rings also shown separately. Yarway Seatless Valves are available in angle and straightway types, in four tandem combinations.

For information on Yarway Seatless Valves, sizes, materials, pressures, etc., write

YARNALL-WARING COMPANY Home Office: 116 Mermaid Ave., Phila. 18, Pa.
Southern Representative: Roger A. Martin, Bona Allen Bldg., Atlanta 3, Ga.

YARWAY SEATLESS ...a good way to specify blow-off valves



The light from the two lamps (left) helps to build up the level of illumination in the room. But when a wall divides the same room (right), there is a greater proportion of wall area to floor area. Consequently more light is absorbed and less illumination results with the same size lamps.

GOOD LIGHTING a Tool for Production

PART 3 ——— Planning Good Lighting

By ROY A. PALMER
Duke Power Company
Charlotte, North Carolina

SKILL in designing a good lighting system like many other arts, depends upon knowledge of light sources, color, lighting equipment, method of design and experience. Obviously, when investing a relatively large or even a small amount of money in a lighting system, the responsible industrial executive must rely on engineers or trained lighting specialists for the quality, appropriateness and up-to-dateness of their recommendations.

A lighting system should be engineered, not "guessed at" according to an opinion of just any one who thinks he knows lighting. While it is not the purpose of this article to make an Illuminating Engineer of the industrial executive, it is quite appropriate to provide information which will help him to understand the fundamentals of lighting design. Thus, he will be better qualified to evaluate the data submitted in the recommendations by lighting equipment salesmen, electrical contractors or lighting specialists. Thereby, the executive can be better assured of getting more for his lighting dollar.

Spacing of Fixtures

The spacing of rows of fixtures determines the uniformity of distribution of light over an area. Generally, the entire room should be uniformly illuminated. If the fixtures are spaced too far apart, the worker at one machine may not have the illumination to sharpen his vision, while the worker at a machine only a few feet away may have adequate illuminaiton.

A good rule-of-thumb for spacing of fixtures is to locate them no further apart in *either* direction than they are mounted from the floor. Thus, if the ceiling of the room permits fixtures to be mounted 10 ft from the floor, they should not be spaced greater than 10 ft apart.

Industrial-type fixtures of today are equipped with openings at the top to allow some light to illuminate the ceiling, thereby minimizing severe contrasts which would otherwise result between the bright area of the fixture and a dark ceiling. Fixtures should, therefore, be suspended one foot to 18 inches or more from the ceiling.

Four Factors

There are four general factors which affect the illumination in the room:

1. The fixture
2. The proportions of the room
3. The color of the walls, ceiling and floor
4. Maintenance factor

Fixtures

The purpose of the fixture is to shield the brightness of the lamps and to properly distribute the light in the area served by the fixture. If we assume that the lamps produce a given number of units of light (lumens), a certain quantity of those units of light will be absorbed by the fixture. If we say the lamps provided 100% light, the amount of light absorbed by the fixture may be 25%. Then

we know that 75% is emitted by the fixture. But before this light is received at the work plane, the walls, ceiling and floor absorb some light, depending on proportions and color of the room.

Proportions

To understand the effect of proportions of the room, a simple example may be helpful. In a room 10 ft wide by 20 ft long with the ceiling 10 ft high, we can place two lamps as indicated at left in the diagram at head of this article. These lamps each contribute to the illumination of the center of the room. The proportion of the wall area to floor area will be:

$$\frac{\text{Wall}}{\text{Floor}} = \frac{600 \text{ sq ft}}{200 \text{ sq ft}} = \frac{3}{1}$$

Or, we have a proportion of 3 to 1.

If we place a wall across the middle of the room as shown at right in the diagram, this new wall will absorb some of the light from each lamp which formerly contributed to the illumination of the room. The proportions of wall to floor area in each room will now be:

$$\frac{\text{Wall}}{\text{Floor}} = \frac{400 \text{ sq ft}}{100 \text{ sq ft}} = \frac{4}{1}$$

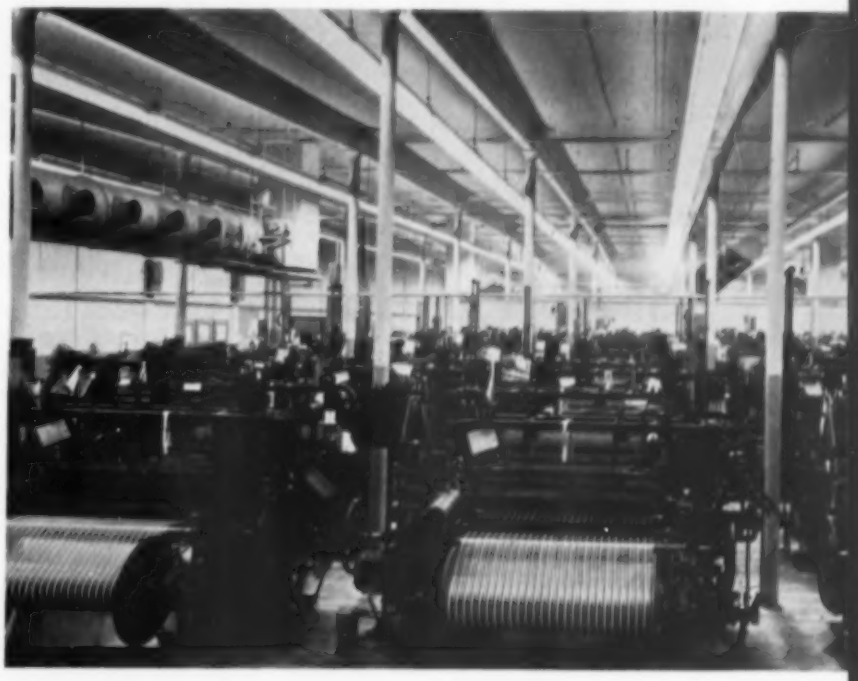
The greater wall area in the smaller room absorbs more light and therefore the illumination in each room is less, *with the same wattage lamps*. We can, therefore, conclude that it takes more wattage to produce the same illumination in a small room than in a larger room. The proportion of various room sizes with various mounting height of fixture, is called "Room Index." Tables showing these can be found in lamp manufacturer's bulletins on lighting design.

Colors

Darker colors will obviously absorb more light than light colors. We must, therefore, take this factor into consideration with respect to the color of the walls, ceiling and floor of the room for which lighting is to be designed. When we subtract from the 100% light produced by the lamps, the absorbtion of light by the fixtures, the Room Index and the walls, ceiling

THE OLD LIGHTING in the Stonecutter Mill at Spindale, North Carolina provided a wide variation of 5 to 15 foot-candles. The lack of uniformity was due to the poor spacing. Also, the arrangement of fixtures provided a severe contrast between the work plane and the balance of the room.

THE NEW LIGHTING in the Stonecutter Mill called for the suspension of rows of fluorescent fixtures approximately 2' from the ceiling, thus, giving uniform illumination of 70 foot-candles through the weave room. The fixtures permitted approximately 10% upward light to the ceiling, relieving contrast and contributing to the pleasant appearance of the room. High Output, Rapid Start fluorescent lamps were used in the fixtures.



and floor, the resulting light is utilized on the working plane. This resulting figure has the elaborate title, "Coefficient of Utilization."

Catalogs of fixture manufacturers have tables showing various Coefficients of Utilization of each of their fixtures. Typical figures also appear in lamp manufacturers' literature on lighting design.

Maintenance

There remains the fourth item affecting illumination from a lighting system and that is Maintenance Factor. When a lighting system is new and the walls and ceiling have been freshly painted, the system delivers the most light. But as the lamps burn week after week, the light emitted by them decreases to some extent. By far the greater toll of absorbed light can be blamed to accumulations of dirt and dust on the lamp and fixtures and to the decreased reflectance of the walls and ceiling.

When computing illumination it is generally assumed that there will be a 30% decrease from the foot-candles originally on the work areas when the lighting system was new. A Maintenance Factor of 70% is used in the calculations for relatively clean areas to "bump up" the original light output to compensate for this decrease over a period of time.

Formula

The formula use for calculating the number of lamps required to produce a given number of foot-candles is:

Lamp Lumens required = (Foot-candles × arc in sq ft) ÷ (Coefficient of Utilization × Maintenance Factor).

Lamps are rated in lumens (units of light). Lamp manufacturers' catalogs show the lumen output of each lamp. Dividing the lamp lumens into the lamp lumens required as determined by the above formula, it is easy to find the number of lamps necessary to produce the desired foot-candles.

When a lay-out is made locating the fixtures according to spacing rules as mentioned previously, taking into account the arrangement of bays or other architectural features, the number of fixtures become quite definite. Reversing the above formula, the foot-candles which this number of fixtures will deliver can readily be determined:

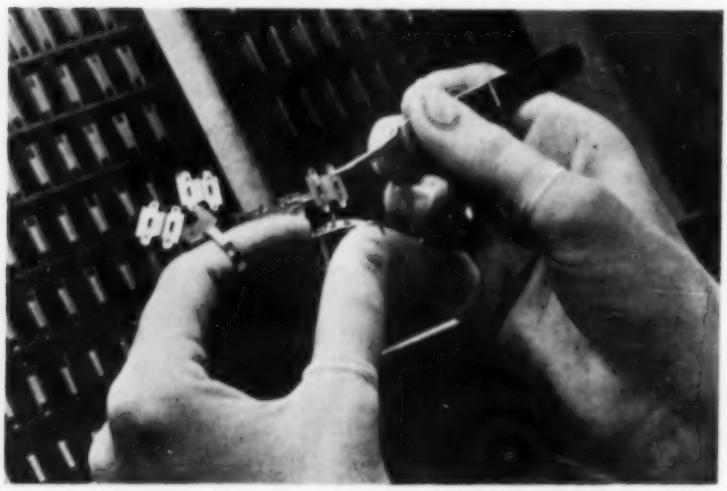
Foot-candles = (Lamp Lumens × Coefficient of Utilization × Maintenance Factor) ÷ Area in sq ft.

The lamp lumens are the total lumens of all the lamps in the fixtures in the layout. If the resulting foot-candles are too low, closer spacing or more lamps per fixture or both closer spacing and more lamps are indicated.

The above method is used for planning general illumination. Where there is need for a very high number of foot-candles to provide good seeing of minute details or work of fine accuracy in relatively small areas, supplemental or local lighting should be planned for the immediate area where such work is performed.

Each Job Special

A considerable amount of research has been carried on to ascertain the best lighting of work areas for detailed and prolonged seeing. There are no standardized solutions to local lighting problems. Each must be analyzed by taking into account what is to be seen, the time involved for completing the task, the contrast with surrounding areas, the character of the product such as items with reflective surfaces which may be disturbing, the type and size of the light source required, and similar factors which may call for the services of an experienced illuminating engineer. This subject will be treated in some detail in a subsequent article in this series.



The Squeeze Is on the Tweezer

MAGNETIC "fields" not only play an important role in the operation of communications equipment made in various General Electric plants, but also extend into the production area.

Here, a small permanent magnet worn as a ring simplifies assembly of tiny parts in precision manufacturing at Owensboro, Ky., where high reliability electronic tubes for military and aircraft use are made.

Motion studies reveal that U-shaped Alnico 5 magnets, supplied by G-E's Edmore, Mich., magnet plant, step up this "tweezer" operation 12 per cent. Formerly, time was lost through extra motions in picking up tiny parts individually from bins.

Packaged Ljungstrom® Preheaters increase efficiency for boilers as small as 25,000 lbs per hour! Money spent on fuel in a single year often equals the cost of the boiler itself! And with fuel prices continually rising, every BTU is doubly precious.

So don't let fuel dollars go up the stack—in smoke. Whether your boiler produces 25,000 or 250,000 pounds of steam per hour, the shop-assembled Ljungstrom preheater recovers heat—and dollars. Results: FUEL CONSUMPTION IS REDUCED! Generally 10% or more. This will usually write off the cost of a Ljungstrom in less than 2 years.

BOILER PRODUCTION IS INCREASED! By preheating air, higher temperatures in the furnace are assured, higher heat absorption and steam producing capacity are made possible.

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LOW GRADE FUELS PRACTICAL! Higher furnace temperatures permit effective burning of very low grade fuels.

COMES READY TO INSTALL! The Ljungstrom is shop-assembled, is easily applied to your steam-generating units. For details, contact The Air Preheater Corporation today. Ask for our free brochure.

The Air Preheater Corporation, 60 EAST 42ND STREET, NEW YORK 17, N. Y.

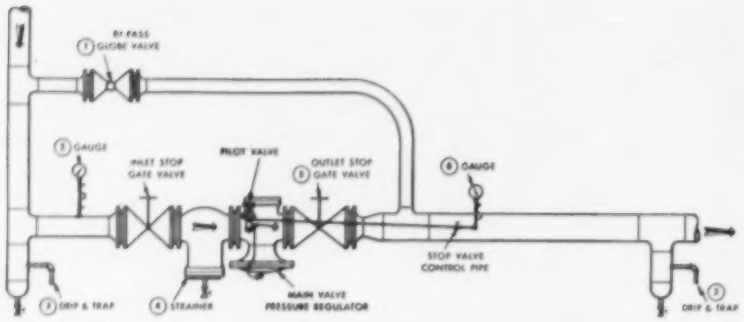


Fig. 1. Well designed regulator station with bypass and stop valves for easy and safe start-up.

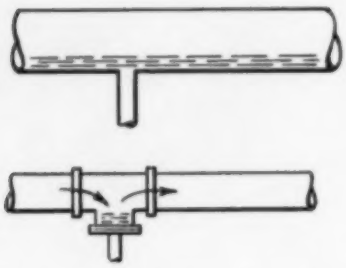


Fig. 2. Condensate will be carried past drain connection to trap in top drawing. A "tee" or separator should be used as shown in lower drawings.

Safety Is Essential Feature of REGULATING STATIONS

By E. GRAFE, Field Engineer
Spence Engineering Co., Inc.
Walden, New York

SAFETY is one of the primary requirements of a pressure or temperature regulating station for the control of the flow of steam and other gases. Well designed regulating stations can become hazards through oversight, construction errors, or improper handling.

Safety Valves

For instance, safety valves are often sized to relieve the required load at some given rise above controlled pressure. This method of sizing does not make allowance for the fact that a pressure regulator's wide-open capacity always exceeds, to some degree, the requirement of the system which it feeds. The safety valve should be sized to handle the ultimate capacity of the regulator at the permissible rise in controlled pressure.

A safe venting arrangement for the safety valve is often overlooked. In one installation a safety valve was vented directly into the equipment room. It opened and relieved pressure when dirt lodged under the disc of a regulator. Before a shut-off valve could be reached and closed, the steam had blown a considerable amount of insulation off the equipment room ceiling. Most of the electrical gear located in the same space was saturated. Omission of the few feet of pipe required to carry the safety valve discharge out-of-doors in this case was expensive.

Traps

The dangers of water-hammer in a steam system are recognized and yet there are many existing installations in which condensate, forming faster than it is removed, has caused trouble or still exists as a potential danger. In one case, an underground distribution main has a low point which is swept dry when the load is substantial. After periods of low load, however, condensate that has collected at the low point is picked up and is carried through the line when the load increases. The piping swings in its hangers and pounds dangerously.

In another underground installation, the piping passes through manholes which flood from time to time. During floods the condensation rate increases beyond the capacity of the traps installed. This problem was brought to light when condensate water washed dirt from the system into regulating valves, holding them open and causing safety valves to blow. Dirt was also washed into the traps, plugging them and worsening the situation.

Safe Start-Up

In still another installation the start-up procedure was careless. Traps sufficiently large to carry off condensate as it formed in a hot system could not handle the large volumes brought to them on a fast start without the proper warm-up. Condensate was carried into the regulator with such force that the pilot blind flange blew off.

Placing a regulator on stream

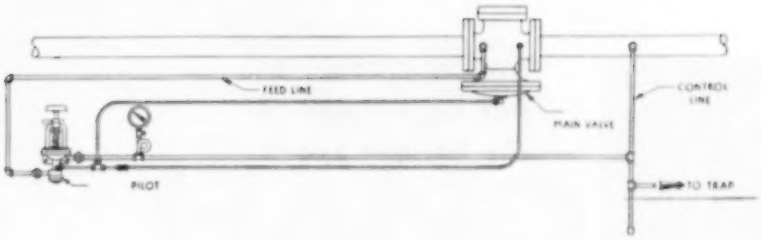


Fig. 3. Pilot is placed conveniently for adjusting where frequent change or shut-off is needed.

Fig. 4. Gate valve in line to pilot controls main valve from a distance up to 50 ft.

after a long shut-down when the system is cold should be done with care. With the regulator isolated by closing the stop valves, heat up the downstream line by admitting a small amount of steam through the bypass. Then crack open the downstream stop valve. Crack open the upstream valve which will admit steam to the pilot and open the main regulating valve. Gradually increase the flow until it is normal and is being handled by the regulator.

If there is water in the system, the downstream stop valve, when still throttling, will prevent water from entering the system. The stop valve will prevent the rush of uncontrolled steam into the system in the event that water hammer damages the regulator upon initial start-up. (Fig. 1)

Trap connections to a main are sometimes found so arranged that the main will be adequately drained when the flow (and the velocity) is low. But condensate will be moving too fast and will pass the connection when loads and velocities are higher. (Fig. 2)

Temperature Regulation

Trapping considerations are particularly important as they apply to temperature regulation. Such traps are (more than those on pressure regulators) subjected to wide and fast fluctuations in load. They are also subject to extended periods of dead-end shut-off when condensate can form and collect in the absence of careful trapping.

Temperature regulation, especially as applied to water heating system, introduces additional problems of safety. Inclusion of a pressure-temperature relief device on the water side of a heater is taken for granted as is, in some cases, a safety valve on the steam side. But these devices usually permit water temperatures to reach 180 F before relieving.

A gradual rise in temperature, even of water to showers, will not involve too great a danger because adjustment is available in the shower. But if dirt suddenly causes a temperature regulator to open wide and the water to heat quickly beyond a safe limit, there is severe danger. Obviously dirt legs and strainers on such an installation are vital.

If the thermostat is so located that it cannot sense a temperature change quickly (if it is perhaps only one-half or one-third submerged in the flow or if it is too far from the heater outlet) a similar condition can be set up.

A dangerous oversight was discovered where toilet tanks were replaced by flushometer installations without an increase in the size of the cold water feedlines commensurate with the high instantaneous demands of these fixtures. Hot water was fed to the showers at 180 F (dangerously high). Only good luck prevented serious injuries. Each time a flushometer was used, cold water pressure at the shower head dropped (through friction loss at high flow) to the point that almost 180 F water issued, steaming, from the shower.

While this is an extreme case, the same situation in lesser degree exists in one-quarter to one-third of the hotels throughout the country. This problem in factory shower rooms has recently been recognized and union safety committees have made it a target in many areas.

Remote Control

Manual remote control or, at least, remote shut-off should be considered if the continued flow of steam is hazardous under certain conditions in chemical and other industrial processes (Figs. 3 & 4). Automatic remote shut-off tied in electrically with other steps in a process should also be examined as a safety measure.

All of these problems have been discussed here in terms of their effect on a system's safety. This alone justifies the greatest care in system design, inspection and operation. It is also clear how the maintenance cost is increased by such system weaknesses. There is a double reason to justify their correction.

Can You Put Your Finger on the Trouble Spot?

A QUEEN BEE chose this 50 hp motor as a new home for her colony of more than 20,000, thus delaying the shipping plans of General Electric's Small A-C Motor and Generator Department. The bees were finally routed to a new residence through the efforts of employee George Strait, an amateur apiarist, who took the motor apart and removed the queen. Not one person was stung during the three-hour hunt for the queen.

Versatile Plant Men

THERE'S A LESSON in the above news item. Few plant men will need to put a finger on a queen bee, but in this day of specialization, versatility can be a virtue. Bees in a motor may be rare, but comparable zoological problems are not rare. Snakes on electrical circuits, kingfishers in the generator room, rats in conduit, willowflies on screens, eels in condenser tubes — all are common problems to the men that keep wheels turning.

But the point to this little essay is the need for general versatility among plant employees. Operators that came up in the old plants and learned to recognize smoke and squeaks and vibration as trouble signals also learned to take corrective measures quickly, even if the proper tools and supplies were not at hand. Lack of instrumentation and automatic controls required intimate contact with the equipment — and generally someone knew what to do. Fans, hoses, 2 x 4's, wire, and sledge hammers were put to odd uses, but generally production was continued with relatively little help from highly skilled specialists.

Now the problem is to make full use of automation without making automatons of employees.

Training is not made easier by modern equipment. To develop real skill and versatility is harder now than in the past. Not only do we have fewer operators, but their opportunity to practice what they are taught is rare. They may stand and watch for weeks or months without any interruption to the orderly operation of machines on automatic control. Then a nut comes loose or a wire shorts out — and bang.

It is doubtful if plant operators of the future will ever fully understand the intricacies of automatic controls, but they can learn to spot trouble and push the right button before a smash-up comes. And they can learn to hear, see, and correct ordinary mechanical and electrical failures.

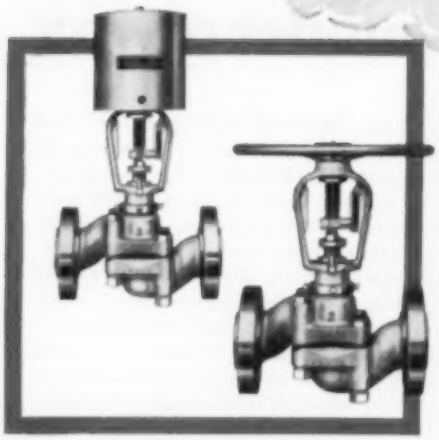
Most big troubles have humble beginnings — rust, wear, dirt, vibration, etc. We learn the importance of these enemies in the maintenance department.

So production men need to know something about maintenance. Operator training programs should include a stretch in the maintenance gang. That's where a plant man learns the feel of equipment and tools. That's where he learns to act quickly when something goes wrong. And, more important that's where he learns to prevent failures that would require quick action.

No! Plant operators will not become automatons. They will be smarter and quicker and more versatile. But the training supervisor has a job to do.

TOP HAND

...where Management
...Production and
Maintenance
are concerned!



ANNIN VALVES *meet every test of reliability, response and easy maintenance at low cost*

ANNIN VALVES are the only valves that meet the rigorous requirements of the missile program and the exacting demands of the modern process industries in a single standard construction at no premium.

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- **PRODUCTION** men prefer Annin Valves because of longer on-stream service and better product control.
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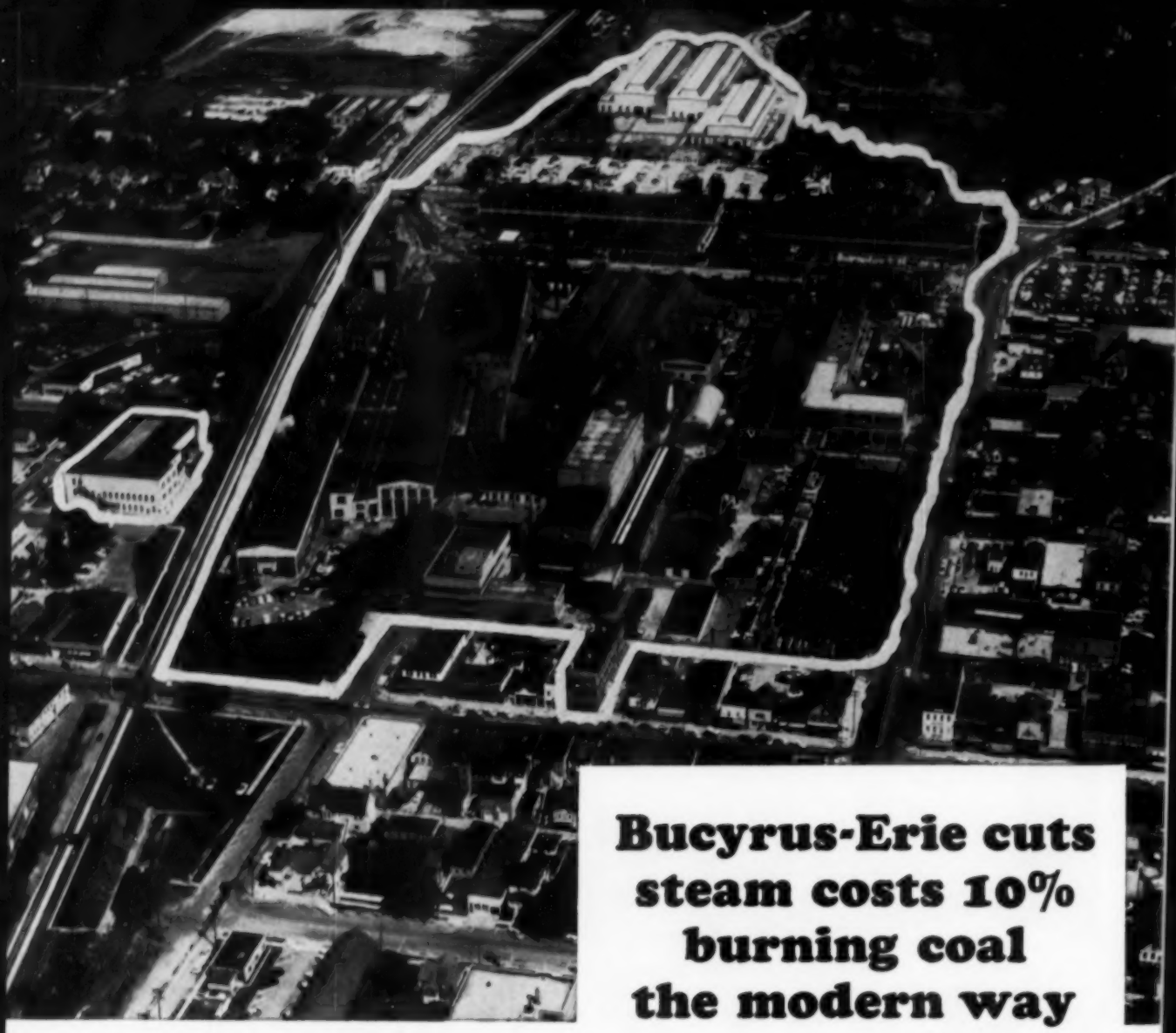

Bucyrus-Erie cuts steam costs 10% burning coal the modern way

Consult an engineering firm

Designing and building hundreds of heating and power installations a year, qualified engineering firms can bring you the latest knowledge of fuel costs and equipment. If you are planning the construction of new heating or power facilities—or the remodeling of an existing installation—one of these concerns will work closely with your own engineering department to effect substantial savings not only in efficiency but in fuel economy over the years.

facts you should know about coal

In most industrial areas, bituminous coal is the lowest-cost fuel available. • Up-to-date coal burning equipment can give you 10% to 40% more steam per dollar. • Automatic coal and ash handling systems can cut your labor cost to a minimum. Coal is the safest fuel to store and use. • No smoke or dust problems when coal is burned with modern equipment • Between America's vast coal reserves and mechanized coal production methods, you can count on coal being plentiful and its price remaining stable. •

Bucyrus-Erie Company, South Milwaukee, Wis., had a steam generation problem. Not only was original equipment deteriorating but capacity proved inadequate for expanding plant facilities. Working with consultants Gates, Weiss and Kramer, of Milwaukee, the company decided to modernize its power system.

Today the power plant at Bucyrus-Erie is almost completely automatic and utilizes the newest coal-burning and handling equipment. In addition to increasing steam generating capacity 85%, this modernization program has lowered annual steam production costs 10% and labor costs 35%. Burning coal the modern way has increased steam quality, improving production processes and heating throughout the plant.

For additional case histories on burning coal the modern way or for technical advisory service, write to the address below.

BITUMINOUS COAL INSTITUTE
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Harleyville, South Carolina . . .

TRACTOR SHOVELS Handle Many Jobs

PHOTOS show versatile wheel type tractor shovels in use at the Giant Portland Cement Company's 2 million barrel cement plant at Harleyville, South Carolina.

Units used are Model HO "Payloader" tractor shovels, manufactured by The Frank G. Hough Co. Applications include loading out overburden in quarry stripping operations, loading trucks with ore, handling brick for kiln relining, loading out plant refuse material, moving equipment in production, feeding material to hoppers in the crusher operation, and hauling grinding balls used in manufacturing processes.

Air-Powered Truck Cuts Explosion Hazards

WHEN explosion hazards run high, as with stowage of refinery products aboard ship, specifications call for air-operated, explosion-proof lift trucks for pallet handling. Two Gardner-Denver air motors were designed into this Barrett-Craven Air Palletier to eliminate all electrical devices: motors, contactors or resistors—the principle causes of sparking.

As used in this shipboard loading operation at Newport News, Virginia, the Gardner-Denver air motor is connected to a pump (photo) which develops hydraulic pressure to elevate Air Palletier lifting forks. A second air motor provides driving power. The air hose leading from truck supplies air from dockside compressor.

Atlanta Demonstration . . .

AIR FILTERS
Automatic Renewable Media

DISPOSABLE media, once-a-year maintenance and constant filter resistance are some of the advantages of Roll-O-Matic, an interesting development of the *American Air Filter Company* of Louisville, Ky. Following special presentations in Houston and New Orleans, the product was featured in a recent Atlanta, Georgia operating display sponsored by the company and their Atlanta representatives *Rittelmeyer & Company, Inc.*, and *Engineered Products Company*.

What is Roll-O-Matic? The new filter is an automatic renewable media air filter in which the filtering curtain is a thick blanket of bonded glass fibers supplied in rolls containing 65 linear feet of material. Before it is rolled, the glass fiber blanket is coated with a special jell-like Viscosine that will not drop at temperatures up to 150 F.

Clean media from the supply roll enters the air stream at the top of the filter curtain which is supported and conveyed on an endless screen that rotates over top and bottom spools in the filter casing. As the curtain moves down the face of the filter, the glass fiber media accumulates its dust load and is rerolled on the lower spool for convenient disposal.

Advantages include simple operation, infrequent and inexpensive maintenance, adequate cleaning efficiency for most applications, large dust holding capacity and high allowable operating resistance inherent to the viscous principle of cleaning air.

Operating Data. For average service under normal dust condi-

AAF's Roll-O-Matic offers clean air by the roll and once-a-year maintenance. No water or sewer connections required. As simple to service as a roll film camera. Accompanying the operating display to Atlanta were: IRV CLARK, head of the Heating & Ventilating Department; JOHN FRAZIER, Sales Promotion Manager; CHARLES D. WRIGHT and R. Z. MATKIN of the Company's Louisville office.

dition, the media usage with a 10 ft high section would be less than 1½ ft per 70 hour week and a single roll (65 ft) would be a full year's supply.

The filter curtain is moved intermittently to introduce the amount of clean media needed to maintain the desired operating resistance. The frequency and distance of travel as determined by the height of the filter is controlled by an automatic time switch in the drive motor circuit.

The drive mechanism consists of a 1/6 hp motor directly connected to a gear reducer and then thru a roller chain to the lower shaft and re-wind spool. A constant-torque clutch on the rewind spool compensates for the changing diameter of the roll and keeps the used material tightly wound. One drive will handle two sections regardless of height. Roll-O-Matic is made in vertical sections, nominally 3, 4, and 5 ft wide and in heights from 5 ft to 15 ft by 4-in. increments.

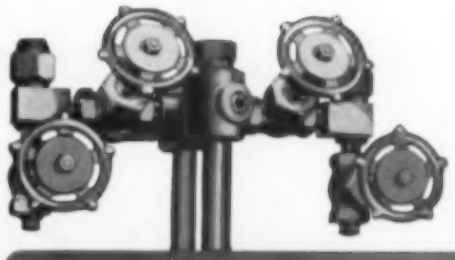
All the advantages of AAF's Roll-O-Matic filter are now available to industrial and institutional users in the Herman Nelson Roll-O-Vent line of industrial unit heaters, heating and ventilating units and air conditioners.

Code Name Chart for Electrical Conductor

ALL PAST and present code name designations for aluminum electrical conductor are brought together in a handy reference wall chart available from Kaiser Aluminum.

The new chart "Electrical Conductor Code Names" lists alphabetically in a general section more than 600 code names and specifies type and size of products. More detailed information is provided in adjacent tables including data on coverings, messengers, sizes, and strandings.

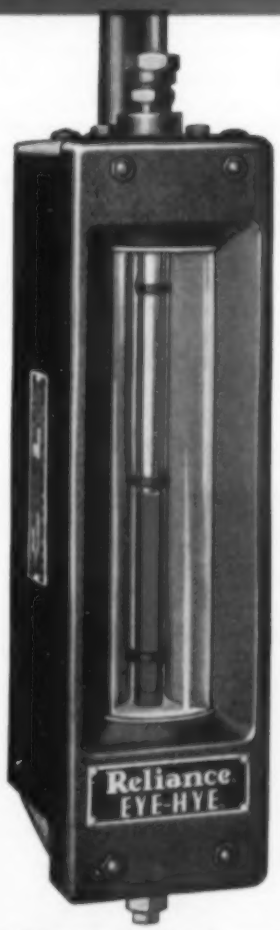
For your free copy write: Edward Collins, Kaiser Aluminum & Chemical Sales, Inc., 919 N. Michigan Ave., Chicago 11, Ill.



Models for panel or wall mounting

"Wouldn't operate my plant without them" says St. Louis engineer, of his

EYE-HYE® Remote Reading Indicators



This Reliance Gage, completely hydrostatic, assures safe, accurate reading of your boiler water levels

Here is easy natural reading (like conventional water gages) with perfect measurement and constant dependability. Twenty years on the market, and still increasing in use, here and abroad.

Simple as A-B-C, EYE-HYE indicates water level clearly by illuminated green fluid. Newly styled face plate gives wider angle of vision. And for extra safety, optional equipment adds auxiliary light signals and/or vibratory horns, reaching operators anywhere.

EYE-HYE serves main boilers — any pressure — and various power plant tanks and vessels in out-of-the-way places. Two EYE-HYEs are now acceptable under Boiler Code Case No. 1155 — eliminate maintenance of extra gage glass.

Rugged construction; no mechanical working parts; no adjustments on location; easy to maintain. Write for Bulletin CO today.

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Atomic Trends

Industry Pays to Learn

PEACEFUL USE of nuclear energy is moving ahead at breath-taking speed despite some setbacks on original cost estimates of nuclear power plants. More economic designs and cheaper fuels are promised for future nuclear power plants. Rubber has been successfully vulcanized by nuclear radiations. Nuclear propelled merchant ships are being designed and built. An atomic plane is in sight. Hydrogen power looks more promising and an improved core for the reactor in the submarine Nautilus is expected to yield even better fuel economies.

By JOHN F. LEE
SPI Consultant on Atomics

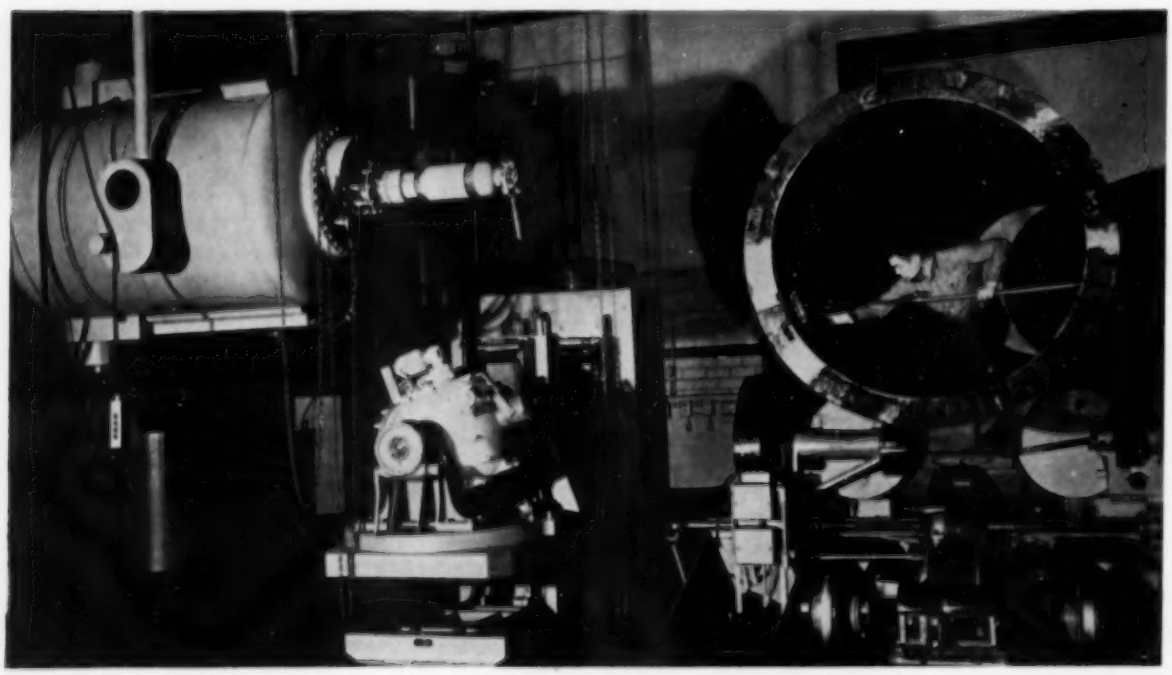
The Babcock & Wilcox Company has been awarded a contract by the Atomic Energy Commission for designing, developing, fabricating and supervising the installation of a pressurized-water reactor and the associated propulsion system in the first nuclear-powered passenger-cargo ship. B & W has awarded a subcontract to the De Laval Steam Turbine Company to design and furnish the main rotating machinery and associated feed system auxiliaries. The Maritime Commission awarded a separate contract to George G. Sharp, Incorporated, to design the ship within three months with plans and specifications to be ready in seven months.

No design details of the ship have been released. However, it is generally conceded that the ship will have a single screw, the propulsion system will develop a maximum of 22,000 shaft horsepower and the speed will be about 20 knots. The vessel is expected to cost approximately $18,000,000 and the nuclear power plant around $22,000,000. The reactor will be constructed on an unclassified basis and any new technological developments are to be made available to industry.

Nuclear Gas-Turbine

A new type of compact, light-

Isocope (center) and two-million volt x-ray unit suspended from ceiling (left).



EUTECTIC Welding News

PLANT, RESEARCH LABORATORIES and WORLD HEADQUARTERS

Published by EUTECTIC WELDING ALLOYS CORPORATION 40-40 172nd STREET FLUSHING 58, NEW YORK, N. Y.

MIDWEST AREA ACQUIRES EUTECTIC WAREHOUSE; Technical Information Center

A new warehouse to serve the fast growing Midwest has been opened in St. Louis by Eutectic Welding Alloys Corporation.

The warehouse will also serve as headquarters for Eutectic's Technical Information Service in the Midwest, North Central United States.

Welding users in the area are urged by Eutectic to take advantage of this new sales and service center, and avail themselves of the unique, free technical services offered by Eutectic Welding Alloys Corp.

In your own shop, factory-trained District Engineers will show you how to get every advantage of Eutectic's "Low Heat Input" metal joining methods. District Engineers (over 350 of them in the United States) have effected large savings for virtually every industry from coast to coast by suggesting welding applications which saved otherwise useless equipment, avoided lengthy downtime for repair and got rid of frequent breakdowns.

Eutectic's research labs and Technical Information Service are at your service to help you solve those "unsolvable" welding problems.

The new Eutectic warehouse will guarantee welding users in this area prompt delivery of the right rod for the job...a fresh-from-the-factory source for the more than 150 Low Temp EutecRods and Low Amp EutecTrodes manufactured by Eutectic.

Put this new Eutectic Warehouse-Service Center to work for you! To get better, faster, stronger welds and repairs call GEneva 6-4644, or write Eutectic Welding Alloys Corporation, 3719 Vest Avenue, St. Louis 7, Missouri. Do it today! *(B-9)*

A BURNING QUESTION ONLY EUTECTIC COULD ANSWER

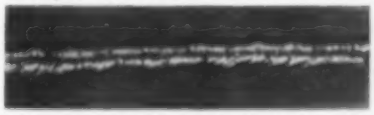
Overlays on the jaws of this "stripper" had to withstand temperatures up to 2600 F—often reached by the red-hot ingots it carries in a mid-western rolling mill. Repeated tests by the mill to find an alloys that would withstand these high temperatures resulted in failure. Conventional overlaying alloys were quickly burned off, and the frequent overlaying resulted in considerable expense, downtime and wasted labor. A Eutectic District Engineer was consulted. He recommended EutecBor #9, Eutectic's super-high alloy overlay, which has remarkable resistance to wear and corrosion at normal and elevated temperatures.

Overlays of EutecBor #9 were applied at 1800 F. Conventional overlaying materials require 2400 F. Low application temperature avoided dilution, and super-hard EutecBor #9 deposits were not mixed with softer base metal. Overlays of EutecBor #9 showed no trace of pitting or galling. In fact, as deposited it had an RC hardness of 55-62, and an RC 36-37 at 1600 F...or sufficient hardness to withstand jet aircraft exhausts.

The mill reported that EutecBor #9 overlays gave them six times greater wear than conventional overlays. *(B-10)*

WELD FAILURES ARE COMMON WITH CONVENTIONAL HIGH HEAT WELDING ALLOYS

A conventional high heat welding alloys produced this weld. Bead was difficult to start. Deposit is porous, slag was difficult to remove. Wide amperage and voltage fluctuation occured, indicating poor weldability of electrode.



EUTECTIC PRODUCES BETTER WELDS AT LOWER TEMPERATURES AND AMPERAGES

EutecTrode 680 produced this weld. Bead is even and smooth. Deposit is dense and free from porosities and cracks. Superior arc control and action prove highest weldability. "Amp-heat Input" remained constant during pass.

YOU CAN SEE THE DIFFERENCE

Eutectic's patented, exclusive Low Heat Input® and Surface Alloying® metal joining processes make possible complete bonding between filler and base metals at temperatures far below fusion points of base metals. This avoids warping, distortion and stress invited by conventional high heat welding materials. *(B-11)*

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2204 Irving Boulevard, Dallas 7, Texas

Eutectic Welding Alloys Corporation
40-40 172nd Street, Flushing 58, N.Y.

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I would like further free information on the following:

☐ B-9 ☐ B-10 ☐ B-11

☐ Free 170 page pocket Welding Data Book.

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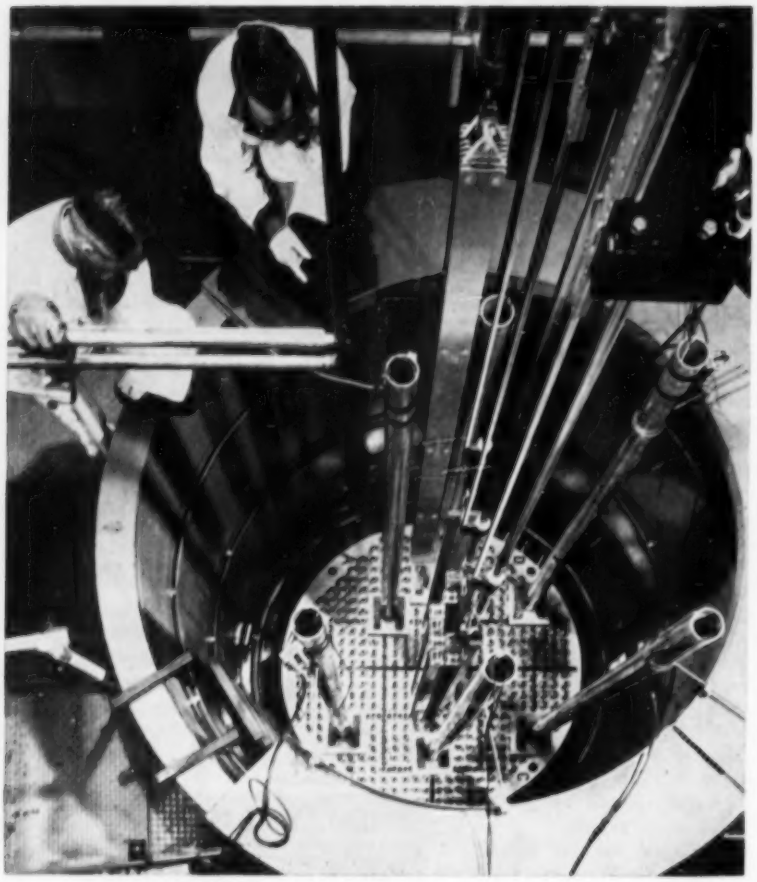
"EUTECTIC" WELDING HEADLINES • TIME • MONEY • MACHINERY SAVERS



Looking down into tank of B & W's critical experiment reactor at Lynchburg, Va. Fuel elements comprising "core" stand on pins on round grid plate at bottom of tank. Neutron-absorbing rods, used to control chain reaction of assembled core, are in position among fuel elements. Long tubes extending from grid plate contain instruments for test and control. Tank is filled with water when reactor is operating.

weight, nuclear power plant suitable for ships and other installations has been announced. Last year, many people in the atomic energy field were surprised by the Atomic Energy Commission's decision to construct a closed-cycle, gas-cooled nuclear power plant at its National Testing Station. They knew that the use of this type of reactor to produce power had not been previously taken seriously, for neither the reactor nor its turbine power plant were beyond the study stage. Today, the reasoning behind that surprising decision has been made clear.

In a paper written under the sponsorship of the American Society of Mechanical Engineers, Engineer Michael Silverberg explained why it seems a good gamble to try marrying a reactor and power plant, neither of which has yet been completely proven. "We do so," said Mr. Silverberg, "because the advantages of one complement those of the other so very well." He listed the following advantages of closed-cycle nuclear turbomachinery:

1. Potentially high efficiency, conservatively estimated to be 40% (a relatively high percentage) at a turbine-inlet temperature of 1500 F and 30% (still an excellent percentage) at the more readily accessible temperature of 1200 F.

2. The compact, lightweight system possible. This feature is particularly important for marine propulsion units.

3. Simpler and cheaper containment, because less energy is stored in a gaseous coolant than in those liquid coolants that require most other reactors to be enclosed within massive steel and concrete walls.

4. Achievement of maximum efficiency at peak reactor temperatures, eliminating heat exchangers and their inevitable energy losses.

5. Complete control over the release of radioactive gases to the atmosphere, in contrast to some other reactor types.

6. The natural enhancement of the cooling qualities of the gas by the pressurization needed for its turbine use.

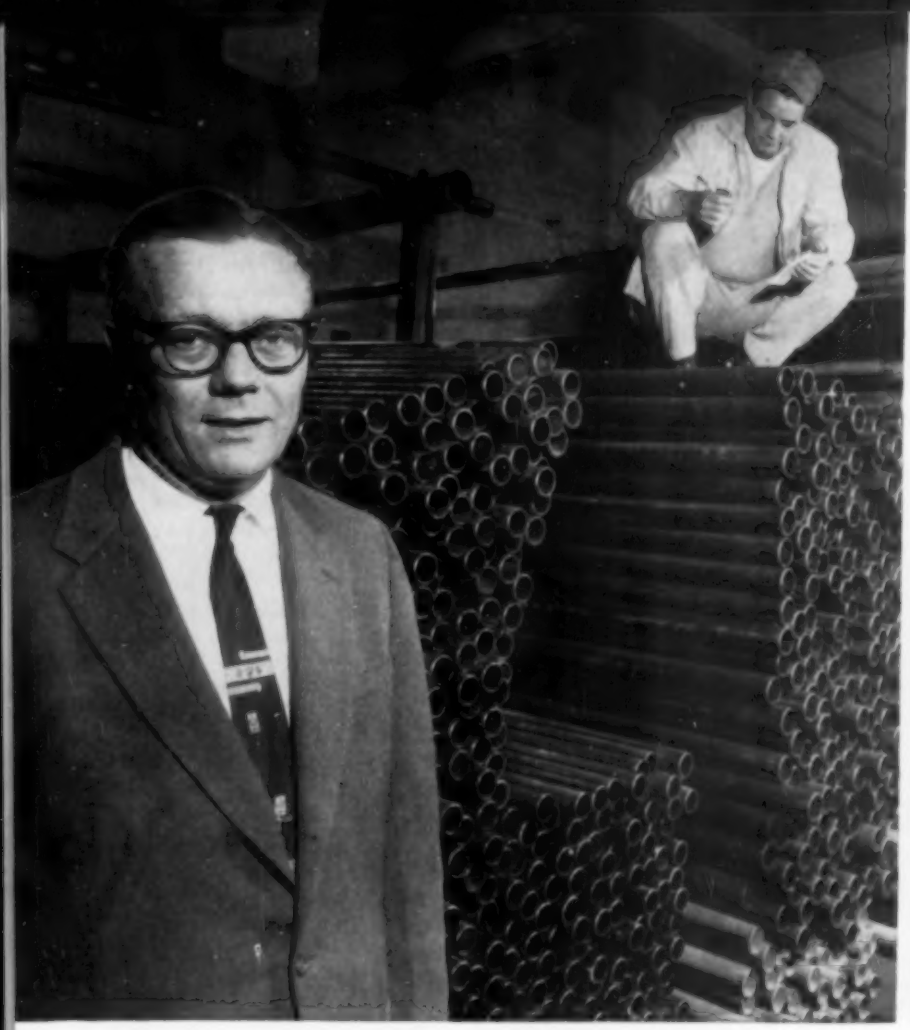
7. Permissibility of part-load operation at constant working temperatures and efficiency — a flexibility lacking in some other reactor types.

Mr. Silverberg stated that the key to the eventual success or failure of the closed-cycle, gas-cooled reactor power plant is the permissible operating temperature. He acknowledged that the effects of high-temperature operation are felt in many areas, all of which must receive investigation, to determine how many of the basic problems can be solved. "But," said Mr. Silverberg, "if most of them can, the closed-cycle, gas-cooled reactor should be here to stay."

Nuclear Vulcanization

B. F. Goodrich Company has announced the successful vulcanization of rubber by nuclear radiation. Nuclear vulcanization is the first basic change in the vulcanization process since 1839. Conventional vulcanization processes involve adding sulfur and other compounds to rubber, which is then subjected to heat to realign the molecules. The process gives the rubber stability without which it would be of limited value.

Nuclear-vulcanization is accomplished without heat or chemicals since it produces a direct linkage of the carbon atom chains of the rubber molecules. Nuclear vulcan-



Lee C. Oliver reports that Daniel J. Keating Company's Sprinkler Division has used SPANG Pipe exclusively for three years. Because Spang is so easy to work with, all jobs are ready-made at the shop, and assembled at job site.

SPANG Pipe sprinkler system protects the Lit Brothers Camden Branch store and merchandise. System uses 30,000 ft. of pipe.

Low-hung ceiling panels hide sprinkler pipes; only the sprinkler heads show through. Total store area is approx. 150,000 sq. ft.

SPANG® CW pipe consistently delivers top-quality performance in sprinkler installations

says Mr. Lee C. Oliver, Manager, Sprinkler Division. Daniel J. Keating Company, Philadelphia

"We've been using SPANG CW Steel Pipe exclusively for three years," states Mr. Oliver. "Our experience has been that SPANG Pipe resists corrosion, vibration and the rough handling which every pipe undergoes during installation. It's easy to cut and thread, permitting us to prepare ready-made systems in the shop for assembly at job sites."

The SPANG sprinkler installation at Lit Brothers, Camden, N.J.

"We installed 30,000 ft. of SPANG Pipe at the new Camden (N.J.) Branch of Lit Brothers department store. The system set to go off at 165 F, is in operation at all times at pressures from 90 psi to 125 psi, and protects the building and merchandise.

"Upon completion of the installation, we tested the system at 200 psi for two hours, since any failure later on would be disastrous. But we have never run into a pipe failure on any SPANG Pipe installation."

SPANG delivers top-quality every time!

Quality Control makes the big difference. SPANG CW Steel Pipe is carefully controlled during manufacture, and is rigidly tested and inspected prior to delivery to assure you of a *top-quality* product for every type pipe installation.

Try SPANG Pipe on your next job. You'll get *top-quality* service from your SPANG Distributor, too!

Architect: Thalheimer & Weitz, Philadelphia
General Contractors: Baton Construction Corp., Philadelphia
Spang Distributor: J. Levitt, Inc., Philadelphia

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DIVISION OF THE NATIONAL SUPPLY COMPANY
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(Atomic Trends—Continued)

ized rubber is expected to wear longer and withstand deterioration better than rubber vulcanized by conventional processes. The economics of the nuclear vulcanization process has not been worked out yet, but it promises rapid vulcanization of tires on a mass production basis at normal temperatures.

Isoscope

An isoscope has been developed by Babcock & Wilcox capable of seeing through a thickness of steel up to seven inches. This new inspection tool, especially useful in radiographing the thick steel walls of a typical pressure vessel, has been under study and development for the past three years. The instrument which makes use of a cobalt-60 source requires only one-third the exposure time of a million volt x-ray unit.

Outlook

The outlook for nuclear power equipment industries was set forth recently by Mr. Leo Macklin, manager of nuclear power sales of Combustion Engineering, Inc. Mr. Macklin stated "that competitive generation of power with nuclear fuel is some time off" is generally accepted. The present approach in this country is to prosecute the development of many different reactor types with the primary aim of arriving at the most economical method or methods of generating power. Fuel enrichment is not in itself an over-riding consideration. Nor, are we faced with the immediate urgency to supplement our fossil fuel supplies.

"It is expected that by this approach significant progress will be made over the next few years. Abroad, the economic ground rules are different, the fuel supply situation is rapidly becoming intolerable and therefore we should expect that nuclear power generation abroad will be justifiable sooner than it will be in this country.

"Notwithstanding this apparent opening up of a nuclear power market abroad, it is extremely doubtful that American companies on a long-range basis will supply over-all reactor plants to foreign users. The unmistakable desire of the nations abroad is to manufacture as many of these nuclear components at home as is humanly possible, relying on American firms for technical assistance.

"However, several comments should be made regarding this long-range outlook:

"(1) Research and Development will undoubtedly continue to be a necessary part of the operations of a nuclear equipment manufacturer.

"(2) Some of the rigid manufacturing requirements must be relaxed by purchasers or production capacity will be severely limited.

"(3) Codes and standards must be established to eliminate the need for costly and exhaustive engineering studies.

"(4) Adequate insurance protection must be made available.

"At this point in our development of nuclear power, we have learned that designing, developing and building power reactors and their components take a good deal of equipment and capital. Modification, standardization and relaxation of severe requirements are prerequisites if the nuclear power equipment industry is to look forward to significant expansion. We must bear in mind that during 1956 the utility industry in this country placed orders with the power equipment industry for approximately 18,000 mw of capacity. Today's infant nuclear power industry could not begin to approach this figure."

Lynchburg Facility

The full-scale experimental version of the core of the first power producing reactor to be licensed by the U. S. Atomic Energy Commission has completed its initial series of tests involving controlled fission chain reactions at the Babcock & Wilcox Company's Critical Experiment Laboratory in Virginia.

The reactor experiment now in progress here is a vital step in the development of the power reactor which is being built for the Consolidated Edison Company at Indian Point, New York. It represents the first use of large quantities of thorium in connection with a nuclear power plant project.

Proposed cores for the Consolidated Edison reactor will be studied extensively in this critical experiment, primarily to obtain the nuclear physics data required to complete the most efficient design and to determine the operating characteristics of the full-scale plant.

The fissionable material being used in the experiment is uranium-235. The thorium is a "fertile material," which when bombarded with neutrons is converted to uranium-233, another fissionable material. This regeneration of fissionable material prolongs the life of the reactor core.

This experiment, and the laboratory which houses it, are the first built entirely at private expense for commercial application. The laboratory was completed last year on the site of Babcock & Wilcox's Nuclear Facilities Plant six miles east of Lynchburg. Housed in a thick concrete "cell," the experiment has several automatic, built-in safety devices. Among these are five independent safety rod systems which can shut down the reactor in a fraction of a second. Any power interruption will cause the rod system to operate through any of four separate electronic channels.

Hydrogen Power

The Texas Atomic Research Foundation, a group of eleven utilities, and General Dynamics Corporation have announced a private research program at a cost of $10,000,000 with the object of harnessing the reaction of the hydrogen bomb to produce power. Work will be carried out at General Dynamics Laboratory near San Diego, California.

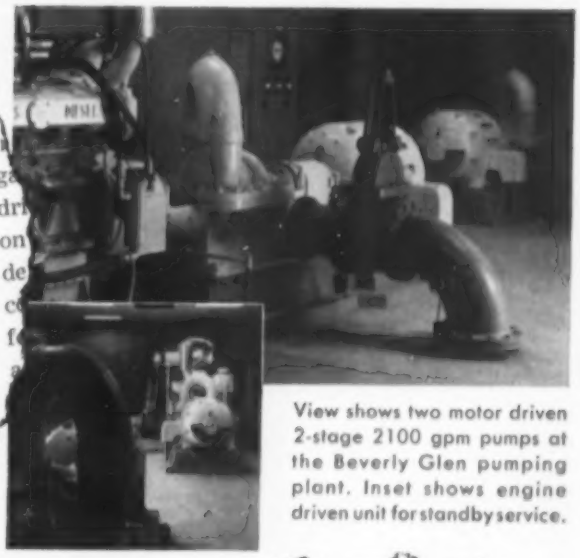
The announcement came as a surprise to the whole power industry. However, the Atomic Energy Commission recently announced that a controlled thermo-

PUMPING HEADlines

By Peerless Pumps

ON THE JOB FOR THE LARGEST MUNICIPALLY-OWNED UTILITY IN THE UNITED STATES—THE DEPARTMENT OF WATER & POWER OF THE CITY OF LOS ANGELES—PUMPING FROM RESERVOIR LINES INTO ELEVATED TANKS

510 FEET is the lift imposed on these 2-stage Peerless pumps. Two of the three 350 hp motor driven units can handle up to 6,000,000 gallons a day from inlet lines into an elevated storage tank of 2¼ million gallons capacity. The third unit, an engine driven pump, also rated at 350 hp, comes on in case of power failure and pressure demand. All three pumps are automatically controlled, starting and stopping being effected by pressure and flow controls. Pumps are designated as Peerless Type 8TU17.



View shows two motor driven 2-stage 2100 gpm pumps at the Beverly Glen pumping plant. Inset shows engine driven unit for standby service.

View shows outdoor all-weather installation of three motor driven 2-stage 1125 gpm pumps at Girard-Woodland pumping plant.

245 FEET is the head on these three Peerless 2-stage Type 5TU15 pumps. Like the units above, these pumps also handle water from a reservoir inlet line, lifting it into an elevated tank, in this case of 1 million gallon capacity. The three pumps have a capacity of up to 3,000,000 gallons a day.

For dependable, efficient pumping select and install versatile Peerless horizontal centrifugal pumps.

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SPI

(Atomic Trends—Continued)

nuclear process was now in the realm of possibility and reinforced this declaration by supporting a large experimental device at Princeton for the study of controlled reactions.

W. A. Parish, president of Houston Lighting and Power Company, heads the Texas Foundation. Mr. Parish has stated that the fuel-rich Texas area would be the last section of the nation to use the fission process and hence the interest in exploring the thermonuclear process.

The total fusion of 2.2 pounds (one kilogram) of heavy hydrogen (deuterium) will produce about 100,000,000 kilowatt-hours of electricity. Also, it is entirely within the realm of possibility that direct conversion of nuclear energy into electricity can be accomplished with the fusion process. The first hurdle is presented by problems associated with controlling the reactions. It is the prospect of negotiating this first hurdle that is so encouraging.

The eleven utilities supporting the Texas Atomic Research Foundation are: Central Power and Light Company, Community Public Service, Dallas Power and Light, El Paso Electric Company, Gulf States Utilities, Houston Lighting and Power, Southwestern Gas and Electric Company, Southwestern Public Service, Texas Electric Service, Texas Power and Light Company, and West Texas Utilities.

Economies

The cost of constructing atomic power plants appears to be running ahead of earlier estimates in a number of instances. The Shippingport pressurized water nuclear power plant was estimated to cost $37,500,000 but now it is expected to cost nearer $55,000,000. The Yankee Atomic Electric Company reports that the costs of its nuclear power are rising substantially above original estimates. The Indian Point Atomic Power Plant was originally estimated to cost $55,000,000, but present estimates are closer to $70,000,000. However, the capacity of the plant has been increased by 39,000 kw to a total of 275,000 kw.

Part of the increasing cost is due to upward trend in the prices of all commodities. Excessive optimism when original plans were formulated is the basic cause for the increased costs as the builders begin to face the true facts. Nevertheless, it would be most disastrous if a wave of pessimism were to supplant the original optimism. Neither the power companies nor the firms of consulting engineers were adequately trained or prepared to come to grips with the fast moving age of nuclear power.

The experiences gained in the first generation of nuclear power plants in the hands of a new generation of engineers (who are not mystified by the basic facts of nuclear energy) can produce a new generation of nuclear power plants whose costs will bear some resemblance to reality.

Basic scientific research is needed and it is encouraging to note that this research is producing worthwhile results. The nuclear power plant of the Nautilus is being revamped to provide for greater fuel economy. Research at Hanford indicates that lower cost Plutonium may become a power plant fuel.

Perhaps the research on hydrogen power being conducted by the Texas Atomic Research Foundation may yet prove the good sense of prefacing engineering plans with hard scientific facts, rather than extrapolating from experience which may not be germane to a new engineering concept.

Florida Utilities

Three Florida companies, constituting the Florida Nuclear Power Group, have submitted a formal proposal to the Commission for the development, design, and construction of the nation's first large-scale nuclear power plant using natural uranium as its fuel. The proposal of the Florida group calls for a heavy water-moderated, gas cooled reactor, fueled with natural uranium, and having a net electrical capacity of 136,000 kw. A preliminary estimate places the cost of building the plant at approximately $40,000,000. The plant is to be completed not later than June 30, 1962.

Members of the Florida Nuclear Power Group are: The Florida Power Corporation of St. Petersburg, the Florida Power and Light Company of Miami, and the Tampa Electric Company of Tampa. The General Nuclear Engineering Corporation of Dunedin, Florida, which is headed by Dr. Walter H. Zinn, former director of the Commission's Argonne National Laboratory, has been engaged to design the reactor and carry out research and development work, including development of the natural uranium fuel elements.

Chairman Strauss said the Florida group's proposal gives added vitality to the already extensive program which American industry has undertaken — either independently or in partnership with the Government — in the development and construction of a variety of promising nuclear power reactors.

Wirebound Packaging

(*Starts Page* 43)

cleats of the blank and the separator is held by grooves built into the inside of the ends. The box is closed with wire-loop fasteners.

The 25 lb cast and machined bombs with delicate fins attached are packed in reverse manner, their noses in opposite directions, and with their hangers resting upon the separator. Intermediate cleats of the wirebound blank act as interior cradle-packing to protect the fins.

The bombs are shipped by the carloads to naval air stations and are stacked ceiling-high on pallets in the Tredegar shipping room before shipment.

During the Civil War, the Tredegar Co. was one of only two iron works in the South supplying guns to Confederate forces. It was founded in 1836 and still is located on its original site.

New Automatic Precipitator Control by

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offers many vital advantages...

1 LONG LIFE

This new control has indefinite life expectancy under all types of operating conditions. There are no tubes to replace, no high speed relays, counters, or timers to maintain. All circuitry consists of rugged "static" devices that have unusually long life!

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Optimum Precipitator power input is maintained regardless of operating conditions. The sensing control is simple, positive, accurate—and automatically evaluates the spark "Power Value" (intensity and frequency)—not just frequency or intensity alone.

3 STABILITY

Under short circuit, open circuit or other varying conditions, this control is completely stable and inherently trouble-free!

4 MODEST COST

Modest initial cost coupled with negligible maintenance assure optimum operating efficiency (therefore lower operating costs) throughout many years of continuous service.

WHEN using a Cottrell Precipitator for collecting dust, fume, fly ash or other suspensions from industrial gases, it is essential at all times to impress on the high voltage system the highest possible voltage and current without "flashover". Depending upon gas conditions, dust loading and other variable factors, the optimum voltage and current requirements vary widely from one minute to the next. Therefore, the vital importance of a simple, trouble-free and highly sensitive Precipitator Control is self-evident.

This new Western Precipitation Automatic Precipitator Control—*a product of the organization that has consistently led in the application of Cottrell Precipitators for industrial gas cleaning* — combines vital advantages found in no other competitive equipment. Our nearest representative will be glad to supply complete details. Or write direct!

Why not modernize your present out-dated Precipitator installation? The Western Precipitation Automatic Precipitator Control can be installed on any Cottrell unit. For further information contact our nearest office!

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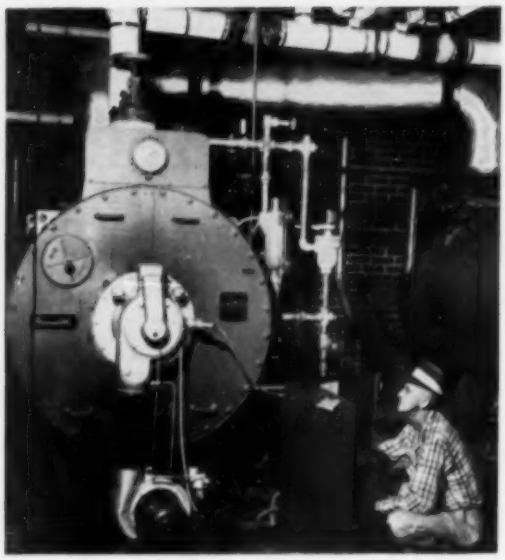

Two 60 hp, 100 psi Powermaster units, installed in a very small area, supply all heat and hot water requirements for hospital.

THE Newton County Hospital at Covington, Georgia is a small but very modern hospital. Compactly designed, the one-story building was laid out to take advantage of a natural drop-off at the construction site. Plans called for the kitchen and storage areas, as well as power, refrigeration and heating equipment, to be grouped within this descending slope at one end of the site. A maximum height of only 30 ft was available for the heating plant area, which was to be topped off flush with the main medical quarters. A modest allowance was made for pylon-type chimneys.

Here was a demand for a packaged power plant that would meet the rigid requirements of a hospital and yet be able to operate efficiently in a very small space.

Hospital authorities and consulting engineers decided on Powermaster boilers, manufactured by Orr & Sembower, Inc. Two 60 hp, 100 psi "package" boilers firing light oil were installed. These package units, complete with all controls and auxiliary equipment, are completely assembled and fire tested at the factory and shipped on their own steel skids.

Packaged boilers are built to particularly close tolerances, requiring a minimum of boiler-room crew attention after installation. They are very compact and do not need expensive foundations or stacks. After delivery, they are ready to work as soon as flue, electricity, fuel and water connections are made.

The hospital power plant has to serve a variety of needs. It supplies steam to a heating system using hot water converters, a domestic hot water generator, and to kitchen equipment and sterilizers. The steam is piped from the boiler to pressure reducing stations and equipment. Three pressures (70 lb, 25 lb, and 5 lb) are required for the various systems.

Efficient burning of fuel combined with fully automatic operation keep the boiler room spotless. The controls protect the boiler equipment against flame failure, low water damage, excess pressure, motor overloading, short circuits and other hazards. If the flame should go out, for example, the safety control automatically cuts off the fuel supply.

"From the time it is fired up the heat output is so intense that it is only a matter of minutes until heating can be obtained at any point desired," said Frank Juden, who supervised the building of the hospital. This quick distribution of the steam is all the more remarkable because it is carried more along lateral rather than vertical lines through the low-lying wings of the hospital.

The two boilers, each fired by No. 2 fuel oil of the common diesel grade are considerably oversize for the existing connections. The designers say the existing boiler equipment will still be adequate after 26 more beds are added to the hospital in the future.

Average fuel consumption for the past heating season was 140 gallons of No. 2 oil per 24 hours, or 5.83 gallons an hour. That is an operating cost of less than a dollar an hour at commercial diesel oil rates.

Boiler maintenance consists of blowing the boiler down twice daily. Hand hole inspection plates are removed and the boilers checked once every three months. A boiler inspector from the insurance company looks the boilers over every six months.

"The automatic controls on these boilers are very efficient," reports the hospital maintenance department. "They've given us very little trouble. Adjustments that have been made were of a minor nature.

The Newton County Hospital, completed about two years ago, was designed by *Aeck Associates, Inc.*, of Atlanta, with *Donald Lindstrom & Associates* of Atlanta, as consulting engineers. The boiler installation was handled by *Spotswood Parker & Co.* of Atlanta, sales representatives of Orr & Sembower, Inc.

Bailey Meters and Controls for Combustion, Feed Water, Steam Temperature and Condensate at Moores Park Station, City of Lansing, Michigan.

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Bailey is the choice of virtually all the most efficient plants on the Federal Power Commission's heat rate report. Here's why:

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Bailey manufactures a complete line of standard, compatible pneumatic and electric metering and control equipment that has proved itself. Thousands of successful installations involving problems in measurement, combustion, and automatic control are your assurance of the best possible system.

2. Experience

Bailey Engineers have been making steam plants work more efficiently for more than forty years. Veteran engineer and young engineer alike, the men who represent Bailey, are storehouses of knowledge on measurement and control. They are up-to-the-minute on the latest developments that can be applied to your problem.

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There's a Bailey District Office or Resident Engineer close to you. Check your phone book for expert engineering counsel on your steam plant control problems.

A133-1

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Electrical Distribution — Four Advantages of a Grounded System

AT SOME TIME or another, the decision must be made as to whether the electrical distribution system in a plant should be operated intentionally grounded or unintentionally grounded. At a recent A.I.E.E. meeting, Henry E. Heddesheimer of the General Electric Company showed why it is their recommendation that in all cases for 3 - phase installation, the grounded wye system be used.

Grounded systems are safer for both equipment and personnel; maintenance cost and time are less; costs for new installations are equalized by ground detecting and ground location equipment necessary in ungrounded systems; and with a 480 volt wye system, 277 volt line to neutral circuits can be used for fluorescent lighting as step up and step down transformers are eliminated and copper costs and losses are less because of the higher voltage lighting circuit.

"The fifth and last item of comparison," Mr. Heddesheimer pointed out, "is in favor of the ungrounded circuit. With a continuous or 'batch' type operation and an ungrounded power system, a ground on one phase will not necessitate an immediate shutdown. The risk that a second ground will not develop in one of the remaining phases before there is time to conveniently shut down and clear the original ground may be taken."

Adequate Protection

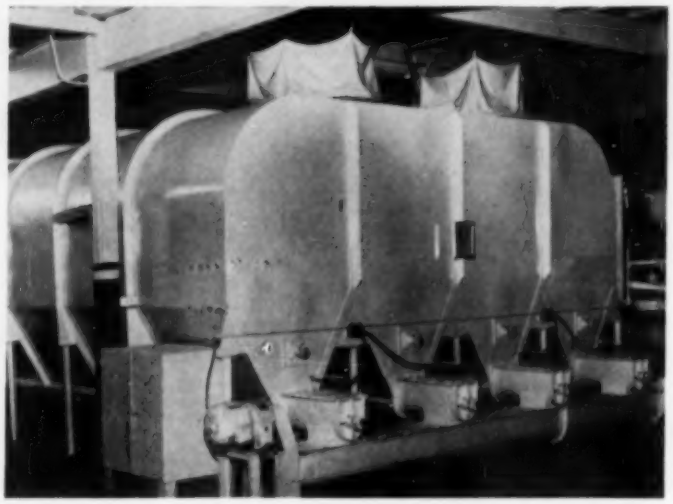
Mr. Heddesheimer also recommended grounding of such apparatus as power tools.

"Establishing good grounds and using proper techniques in installation can only provide the initial protection desired," he warned. "A definite inspection and maintenance schedule must be established to assure that ground connections remain adequate, ground circuits are not broken or burned, resistance to earth is within prescribed limits, etc. In this way, the best known protection for personnel and equipment against shock, insulation failures, electrically ignited explosions, and fires caused by circuit abnormalities and failures, static electricity and lightning surges, will be provided."

Flammable Liquids

FLASH POINTS of 3,600 flammable liquid trade name products and indentification of each product as to its principal uses and manufacturer are listed in the revised 120 page edition of the "Flammable Liquid Trade Name Index" NFPA No. 325 A, available at $1.50 per copy from: National Fire Protection Association, 60 Batterymarch St., Boston 10, Mass.

Index has been compiled as a guide to safe storage and use of flammable liquids.



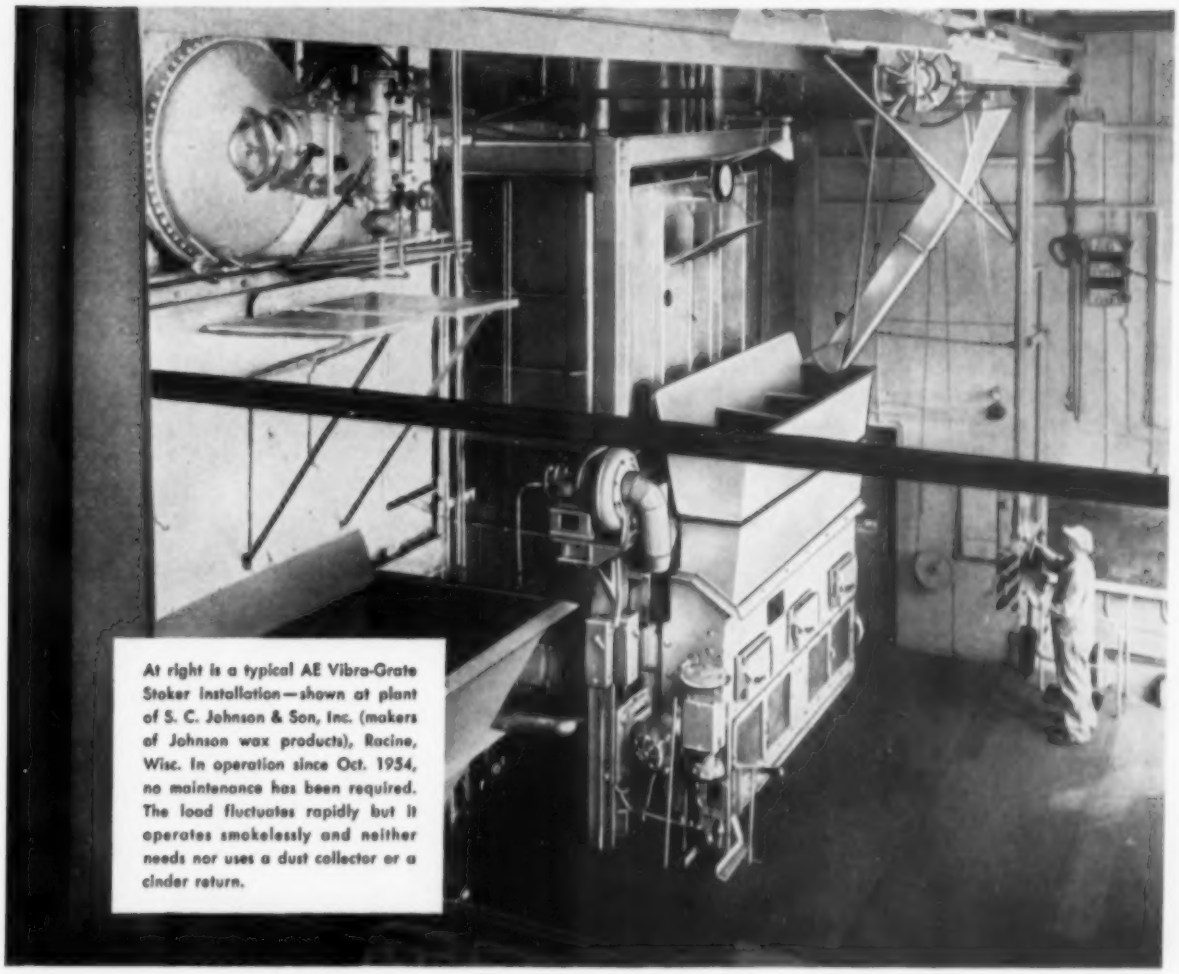
Beaumont, Texas . . .

Screw Conveyors Move Flour

HOLDING 100,000 pounds of flour, this new bin in a Beaumont, Tex., bakery is one of approximately 20 such bins fabricated by Paul Mueller Company of Springfield, Mo., for American Bakeries Company plants. Flour enters the bin via two pneumatic tubes. Cotton filters seen above the bin enclose outlets which allow air to escape. Flour is moved from the bin by "Beeline" screw conveyors which extend the length of the bin at the bottom of its wedge-shaped sections. Each of these four conveyors is 9-in. in diameter and 32 ft long. They discharge into another 9-in. "Beeline" conveyor (right foreground). Series of conveyors then move flour into sifters for processing.

Screw conveyors in the bin are operated by "Fort Worth" roller-chain sprocket drives (power source is electric motor). Both "Beeline" screw conveyors and "Fort Worth" roller-chain sprockets are manufactured by Fort Worth Steel & Machinery Company, Fort Worth, Tex., and supplied to Mueller by Allied Transmission Equipment Co., Kansas City.

Now in its 4th Year!



At right is a typical AE Vibra-Grate Stoker installation—shown at plant of S. C. Johnson & Son, Inc. (makers of Johnson wax products), Racine, Wisc. In operation since Oct. 1954, no maintenance has been required. The load fluctuates rapidly but it operates smokelessly and neither needs nor uses a dust collector or a cinder return.

Write us for latest performance report on this remarkable stoker...the

VIBRA-GRATE

Made by the makers of the Taylor and Perfect Spread Stokers

AMERICAN ENGINEERING COMPANY

S-103 WHEATSHEAF LANE & SEPVIVA STREET, PHILADELPHIA 37, PA.

Canadian Subsidiaries: Affiliated Engineering Corporations, Ltd., Montreal, P. Q. . . . Bawden Industries Ltd., Toronto, Ont.

AE products are: Taylor, Perfect Spread and Vibra-Grate Stokers, Hele-Shaw and Hydramite Fluid Power, Lo-Hed Hoists, Lo-Hed Car Pullers, Marine Deck Auxiliaries.

Delaware "Refinery of the Future" uses

Million Pounds of Nickel Alloy

OVER ONE MILLION pounds of Inco nickel in alloy form was used in the construction of Tidewater Oil Company's recently dedicated "Refinery of the Future," according to The International Nickel Company, Inc. With its 130,000-barrel-per-day capacity, the new Delaware Refinery has the largest initial capacity of any oil refinery ever built. It is located near Delaware City, 15 miles south of Wilmington, Del.

To resist corrosion by chlorides contained in the crude oil at temperatures under 500 F, engineers specified Monel nickel-copper alloy for fractionating trays, bubble caps and piping, and for lining crude distillation columns — specifically, in the overhead system of the crude unit gasoline column, gasoline stabilizer, and the coker fractionater. Monel linings were also used in the lower half of the desulfurizing flash drums and product separators.

Inconel nickel-chromium alloy was employed for the shell (in the form of alloy clad steel plate) as well as for trays and bubble caps of the gasoline stabilizer to resist corrosion by chlorides and sulfur-containing products at temperatures in excess of 500 F.

Incoloy iron - nickel - chromium alloy was specified for the piping system in the hydrogen plant to resist hydrogen attack and maintain high strength at metal temperatures up to 1800 F.

Cupro-nickel tubing of the 70-30 composition was specified throughout the plant in the cooling system where brackish river water is used. Between two and three million pounds of this corrosion resistant metal were used.

Chromium-nickel stainless steel (Type 316) was widely used in the plant to resist organic acids and sulfur corrosion at temperatures in excess of 500 F for such refinery units as the lower section of the atmospheric column, and the lower section of the vacuum column (in the form of alloy clad steel plate). It was also used for pumps, atmospheric heater transfer line and vacuum heater transfer line.

In the production of hydrogen for the desulfurization of naphtha feed stocks for the catalytic reformer, a nickel catalyst was used. For the reforming of virgin naphtha feed stocks to high octane gasoline, a platinum catalyst was employed.

Throughout the plant is an automated system of controls called "Panelog." This innovation gives the various departmental superintendents a printed, running commentary of a particular unit's activities. It also prints a 24-hour summary of what has taken place in the unit and eliminates human error by means of a "memory bulb." Throughout the system pure nickel is used in vacuum tubes and other electronic applications.

The size and versatility of the new Delaware Refinery affords complete flexibility in the manufacturing of petroleum products with unprecedented quality and purity from any or all types of crude oil. The end products of the new plant are LP gas, Flying A gasolines, aviation gasoline, kerosene, jet fuels, automotive and diesel fuels, household fuel oils and fluid coke. The "Refinery of the Future" was constructed by C. F. Braun & Company, Alhambra, Calif.

Antifoam in Distillation

FOREST Products Chemicals Co. Inc., Memphis, Tenn. extracts wood oils, acetic acid and methanol by fractional distillation. Foam produced during the process reduces the effectiveness of the heating elements in the distillation columns to a point where optimum temperatures cannot be maintained. As a result, the liquid may "coke out" on the surface of the elements and columns necessitating costly unit shutdowns for cleaning.

Even worse is a foam boil-over in the system. Some stills require 40 hours maintenance work from each of 15 to 18 men before the units are in condition to go back on stream.

These were some of the foaming problems at Forest Products before C. B. Herrington, Chief Chemical Engineer, eliminated foam by adding 5 parts per million of Dow Corning Antifoam A Compound to the boiling stream. This extremely effective silicone defoamer has proved to be the most effective system according to Herrington, and it requires no additional machinery, equipment or maintenance.

Repairing Keyways

WHEN the sides of a keyway are so damaged as to require build-up by welding, shape a piece of battery carbon to the contours of the keyway, insert it in the slot, and then weld up all around the sides of the shaft against the carbon.

The carbon isn't affected by the heat and knocks out readily afterwards, leaving the keyway ready for machining.

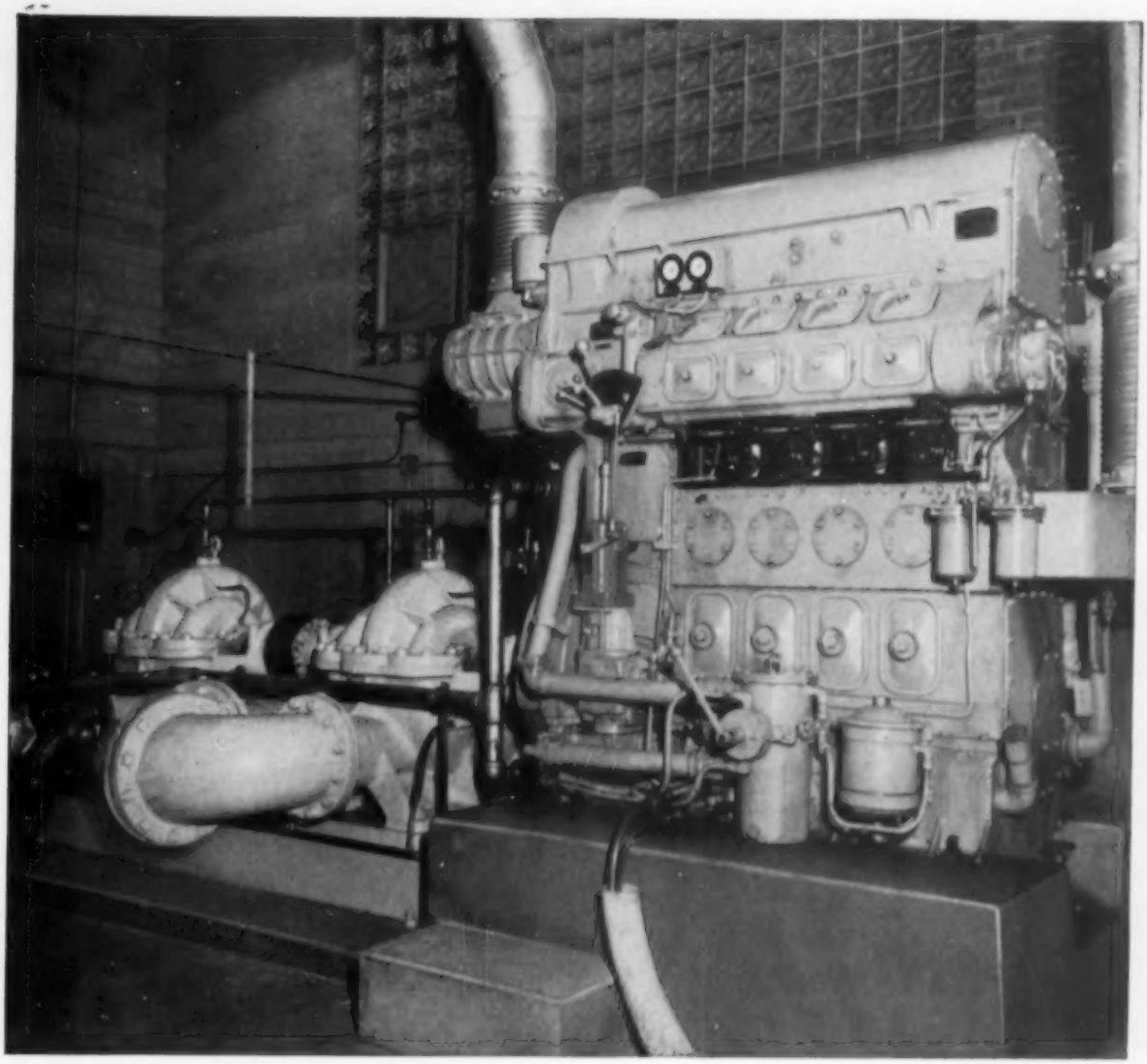
By HENRY MAYO (Fla.)

Chain Block Safety Chart

A CHAIN BLOCK is a piece of precision equipment and should be treated as such. Like any other precision tool, it gives the best performance only when kept in top condition and when properly operated.

To get the most from your block a complimentary "Safety Chart" illustrating safe handling of chain blocks is available from Manning, Maxwell & Moore, Inc., Muskegon, Michigan.

The 17 x 21 in. wall chart shows you how to handle blocks carefully, and to use correct operating procedure.



FAIRBANKS-MORSE TEAM

Cuts Pumping Costs in Half

Power costs at Canandaigua, New York, were running $24.68 for a million gallons of water pumped. Then a Fairbanks-Morse team of 300 horsepower Opposed-Piston diesel and two 10″ centrifugal pumps took over and made a power savings of 51%.

Originally installed as a standby unit, the Opposed-Piston diesel engine produced such obvious economies that it soon was scheduled for a major part of plant pumping—providing power to pump as high as two million gallons a day in the summer. The 10″ centrifugals operate in series and, though designed for 2500 g.p.m., they consistently average 2800 g.p.m. at a net head of 304′.

F-M engineering that matches power and pump can bring economy and increased efficiency to your specific pumping problem. Write for details on the type and size of pump you need—there are more than 50,000 models in the F-M pump line. And there's a "working model" of the Opposed-Piston engine contained in Bulletin No. AOX-350.15, waiting for your request. Fairbanks, Morse & Co., Dept. SPI-9, Chicago 5, Illinois.

FAIRBANKS-MORSE

a name worth remembering when you want the BEST

Diesel and Dual Fuel Engines • Diesel Locomotives • Rail Cars • Electrical Machinery • Pumps • Scales • Home Water Service Equipment • Magnetos

Philo Plant of Ohio Power Company on American Gas & Electric System. Stack in front is for the new Supercritical Unit.

B&W's Universal Pressure Steam Generator

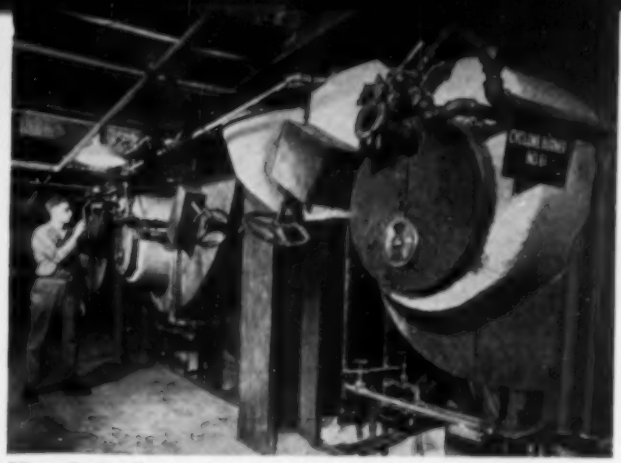
Helps Philo Plant Open the Way to New Economies in Steam-Electric Generation

Generating history is being made at the Philo Plant of the Ohio Power Company on the American Gas & Electric System. Here, America's first commercial supercritical pressure steam-electric unit is in operation, probing the frontiers for new economies in the production of energy.

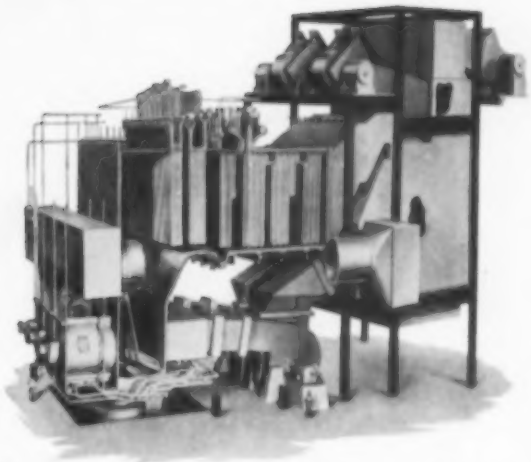
A Symbol of the Vision and progressiveness of America's public utilities and their suppliers, Philo is a landmark in engineering history. It is the result of years of engineering, research, and development that solved the many problems which had stood in the way of greater plant efficiency that comes with the highest possible combination of pressure and temperature.

The Problems Solved included the very difficult ones of feedwater chemistry, of heat transfer and control of internal deposits, metallurgy for higher temperatures combined with higher pressures, and development of control and operating techniques.

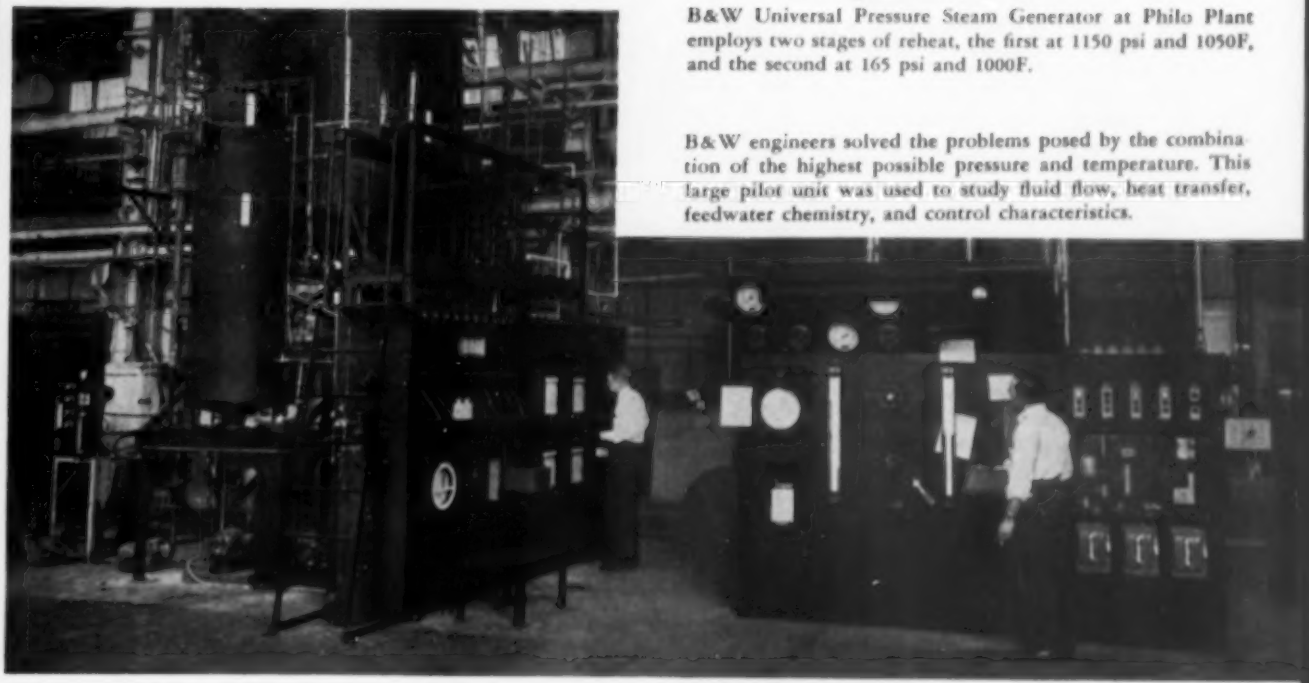
Philo's Supercritical Unit, with a turbo-generator operating at 4500 psi and 1150F, is producing over 120,000 kw, in the same space and using 45 per cent less fuel per kwhr than the 40,000 kw unit it replaced.



Three B&W Cyclone Furnaces assure rapid and complete combustion, with minimum fly ash discharge and maintenance.



B&W Universal Pressure Steam Generator at Philo Plant employs two stages of reheat, the first at 1150 psi and 1050F, and the second at 165 psi and 1000F.



B&W engineers solved the problems posed by the combination of the highest possible pressure and temperature. This large pilot unit was used to study fluid flow, heat transfer, feedwater chemistry, and control characteristics.

Two More B&W Universal Pressure Steam Generators are now being built for The American Gas & Electric System. Together these will produce 900,000 kw—enough to supply residential power for a city of 8,000,000. Like Philo, they will continue to push forward this new frontier in steam generation.

Nearly a Century of B&W leadership in steam generation stands behind these achievements. The Babcock & Wilcox Company, Boiler Division, 161 East 42nd Street, New York 17, N. Y.

G-833-C5

BABCOCK & WILCOX

BOILER DIVISION

Shop assembly of secondary front wall. Pre-assembly of many components for the Universal Pressure Steam Generator greatly speeded field erection.

NEW Product Briefs

Relay Protects Transformer & Connected Load of Motors

J-1 A Type TNS "Bus Bar" Protecting Relay, developed by **ESCO Manufacturing Company,** Box 1039, Greenville, Texas, protects a transformer and its connected load of three-phase, induction motors against outage or damage from either one or any combination of voltage unbalance, single-phasing, or motor overload, when motors are connected thru circuit breakers having under-voltage trip.

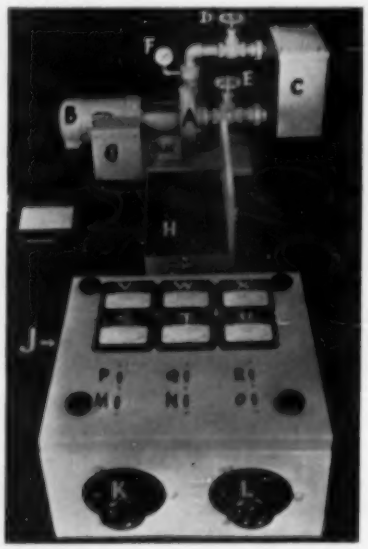
Instrument may be connected thru either the primary load-break switch or main secondary circuit breaker. In either instance it is guaranteed to drop out the connected load before damage occurs to the transformer and/or any of the induction motors under the above listed conditions.

Relay works on a current-time curve, with approximately a two minute time delay. This enables it to accommodate a temporary voltage unbalance up to 14%, or a momentary loss of one phase, at the end of which time the relay will operate if the fault continues, and before transformer or motor failure occurs.

Relays are not interchangeable between circuits of other than those with identical characteristics. They are available in any of the standard NEMA enclosures — dust resisting, water and dust tight, explosion proof, etc., as their location requires.

Houston Demonstration — The new Esco Type TS Motor Protecting Relay was demonstrated at a recent Houston, Texas AIEE meeting. To put the relay through possible fault conditions, the illustrated Demonstration Panel was assembled.

A Jacuzzi centrifugal pump (A) with a 1 hp Franklin motor (B) was connected thru a regular motor starter and a control box containing 2 powerstats connected in open delta for inducing unbalanced voltage up to 120%. In the circuit were included 3 switches (M, N & O), in series with the lines, in order to open either line at anytime to effect complete single-phasing.

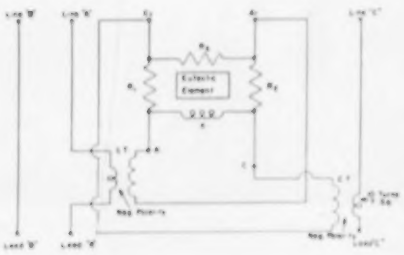


The pump was connected thru a 3 gallon sealed reservoir (C) with globe valves (D & E) on both sides of the pump, to control the pump load from no load to near stalling. A pressure gauge (F) was placed in this line to indicate the pump load at all times. A liquid considerably heavier than water was used in the pump to more quickly build up excessive overloads by using valves (D & E).

Three ammeters (V, W & X) read line currents; and three voltmeters (S, T & U) read line to line voltage. Three ammeter shorting switches (P, Q & R) were included in the hook-up to protect the ammeters against damage from excessively high current on some of the abruptly imposed faults.

At the Houston exhibit the spectator was invited to name the fault, the degree he wanted to see imposed, and under what load conditions. He was then invited to take over the control and "mix his own brew" of faults — single-phase, overload, voltage unbalance, low voltage, etc. The Esco protecting relay always dropped the motor out without damage.

For More Free Data CIRCLE CODE NO. on the Handy Return Card — Page 95



HOW IT WORKS — Relay is, basically, of a negative sequence filter consisting of two resistors R_1 and R_2 (R_2 is on a eutectic post), resistor R_3 and the inductance X. Only the negative sequence current flows in R_2. The I^2R drop in R_2 generates a heat which is proportional to the voltage unbalance.

"Packaged" Gear Unit

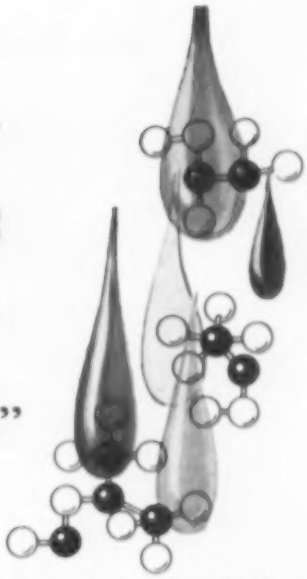
J-2 New power unit by **U. S. Electrical Motors, Inc.,** Box 2058, Terminal Annex, Los Angeles 54, Calif. meets J. I. C. requirements for operations that require a standard NEMA motor mounted separate from the gear unit.

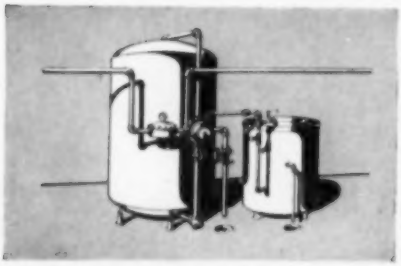
The U. S. Motomount Syncrogear uses a heavy-duty motor support to provide easy access to the motor mounting and coupling. Replacing the motor may be quickly accomplished.

Units are available for wall, ceiling, shaft up or shaft down position mounting; with double reduction gears in ratios that range from 7.6:1 to 47:1. Speed ranges are from 37 to 280 rpm and hp ratings from 1 to 30.

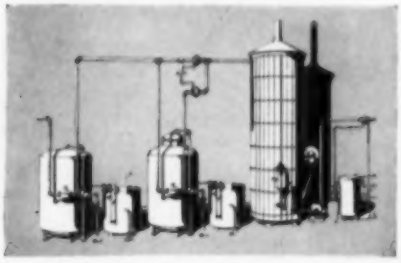
Quote and Unquote:—

"Elgin has dug deeper into ION EXCHANGE than any other firm"

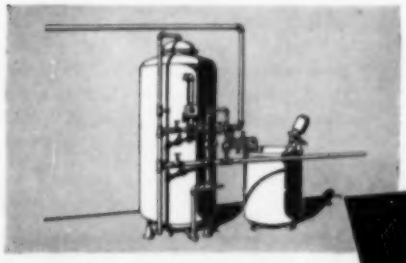




SOFTENING BY ION EXCHANGE — used to eliminate calcium and magnesium hardness from water. All types of ion exchangers available to meet specific conditions.



DEALKALIZATION BY ION EXCHANGE — produces soft water of controlled alkalinity. Various exchangers used, depending on requirements.



DEIONIZATION BY ION EXCHANGE — produces water of better than distilled quality. Ion exchangers of mixed-bed or multi-column design give "tailor-made" effluent to meet process or boiler plant requirements.

An engineer said this when he was asked why he had brought his not-too-simple water conditioning problem to the Elgin organization.

The particular way he put it set us to wondering how many men with water conditioning problems realize the great strides that have been made in ion exchange . . . how many recognize the vital importance of dealing with a firm that has played a leading role in ion exchange development and application.

It is always bad taste—often bad business—to boast; so we won't say that Elgin has dug deeper than *any* other organization. We simply say that certainly no firm has dug *deeper* into ion exchange application than has Elgin during nearly a half century of specialization.

It is squarely on the record that across the years we have *been a part* of the transition from the first simple greensand through the highly specialized ion exchangers and methods that are today accomplishing little short of water conditioning miracles. Just three of almost countless examples of this are given at the left.

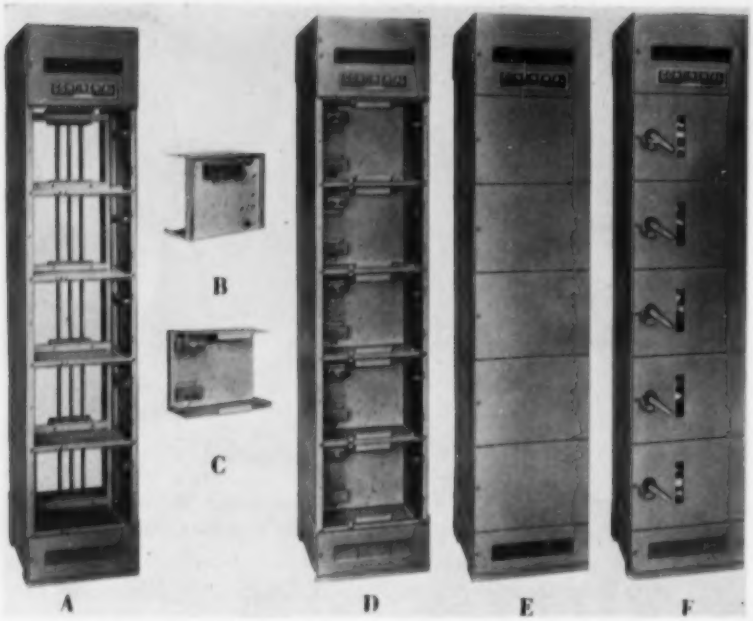
Yes, today it can be said that there is a way to "make over" *any* water supply—*your* water supply—to exactly the kind and quality needed for *any* use. When you put your problem up to Elgin you are certain that Elgin "deep digging" will not only assure you the *right* way, but, still more important, the most *economical* way.

Never forget that Elgin works with *all* methods. No bias; no single-track thinking. One of our engineers will be glad to study your conditions and give you a demonstration of Elgin deep digging.

ELGIN
WATER CONDITIONING
SINCE 1908

ELGIN SOFTENER CORPORATION
132 N. Grove Avenue, Elgin, Illinois
Representatives in Principal Cities
In Canada: G. F. Sterne & Son Ltd., Brantford

New Product Briefs (Continued)



In-Plant Assembly of Motor Control Centers

J-3 "Basic Structures" by **Continental Electric Equipment Co.**, 205 West 4th St., Cincinnati 2, Ohio are modular vertical metal structures which provide the framework and enclosure in which to mount motor controls. Plant engineering and electrical maintenance departments can now easily and economically plan and assemble their own centers.

Each structure is complete with horizontal and vertical bushing and a choice of plug-in type unit mounting bases, compartment heights and door types. Several of the structures may be joined together into a single, coordinated motor control center. Compartments accommodate standard NEMA components.

Photo illustrates typical assembly. To basic vertical structure (A), add draw-out "plug-in" type unit mounting bases (B&E — front and rear views) upon which you mount your control components. These bases are shown in place (D). Plain doors (E) may be drilled in your plant or are available drilled to specifications. Doors equipped with circuit breaker operating handles (F), are also available in five styles to suit varying requirements.

Bulletin No. 475 describes the new structures, available in steel or aluminum. In addition to obvious economical advantages, the new method also provides the company's plant engineering department with the advantage of maintaining complete control over the design, layout and assembly of a motor control center exactly suited to the plant requirements.

Synchronizer

J-4 **Brown Boveri Corporation**, 19 Rector St., New York 6, N. Y., announces the introduction of the first fully automatic instant Synchronizer for fast, automatic speed-matching and synchronizing.

First, it automatically matches the speed of the generator to the system. When the frequency difference is .5 cycles or less (which limits paralleling shock), the Sychronizer computes the proper lead time to activate the breaker so that its contacts will make at the exact instant of phase coincidence . . . and paralleling occurs instantly without the necessity of actually holding synchronism.

The Instant Sychronizer uses no tubes or transistors, and under severe operating conditions, may remain set up for hours without risk.

Incinerator for Plant Waste Disposal

J-5 For industries having quantities of combustible wastes which must be burned safely, **Wilco Machine Works, Inc.**, Box 3722, Memphis 14, Tenn., is marketing the Wilco Refuse Burner, a new high-capacity, low-cost incinerator.

The pre-fabricated, metal, conical-shaped unit, which looks much like an Indian teepee, consists of completely pre-fabricated panels which are bolted together on a concrete ring foundation. Feeding of waste is accomplished by the "batch" method of dumping from trucks into the burner or via a belt or chain conveyor. If material consists of small pieces they may be "hogged" and pneumatically conveyed to the unit.

Three separate draft systems furnish air for combustion, cooling and smoke dispersion. Combustion is quite complete and resultant smoke well within requirements of existing laws in which the unit is installed. A Forced Draft system provides air under pressure from a blower through underground pipes to a series of grate boxes under the refuse. Additional air is "sucked in" through a series of Circular Draft doors around the perimeter of the burner. Extra air is pulled in through an upper Syphon Draft. This air cools the hottest upper portion of the unit and disperses the small quantity of light, white smoke through a large diameter woven steel wire dome.

Sizes of the burner vary from 15 to 80 ft in diameter, overall height ranging from 18 to 95 ft. The 50 ft model is priced at approximately $10,000.00, FOB, factory.

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ALL IN A DAY'S WORK AT *Pittsburgh Piping*

THE FIRST PIPING FOR ATOMIC POWER

Fabricated section in foreground is austenitic steel piping—the first fabricated for the world's first big atomic-power central station. Other components of this system are shown at the right.

This piping is a record maker—being the first ever made for a big atomic-power plant—the Duquesne Light Shippingport station. This job, while challenging, was facilitated by employing the techniques which we had previously developed for fabricating austenitic steel piping for central stations operating at steam temperatures of 1050°F. and higher, as well as for the *Nautilus*. In fact, Pittsburgh Piping was among the first to fabricate stainless steel piping—for the process industries, in 1927. And, we pioneered the use of stainless steel piping materials in the power field. We have the experience and the facilities—use them on your high temperature, high pressure piping jobs.

FREE TECHNICAL BULLETIN ON PIPING MATERIALS

This bulletin reports an intensive investigation into the problem of main steam piping materials and gives data on the stress rupture characteristics of Types 316 and 347 stainless steel piping adjacent to welded joints.

PP-33

Promoting Progress ***IN POWER AND PROCESS PIPING***

Pittsburgh Piping **AND EQUIPMENT COMPANY**
158 49th Street—Pittsburgh, Pa.

Canada: **CANADIAN PITTSBURGH PIPING, LTD.,** 835 BEACH ROAD—HAMILTON, ONTARIO

Atlanta.....Whitehead Building
Boston.....10 High Street
Chicago.....Peoples Gas Building
Cleveland.....Public Square Building
Hollywood.....1828 North Alexandria Ave.
New Orleans.....P. O. Box 74
New York.....Woolworth Building
Syracuse.....113 So. Salina Street
Toronto.....68 Yonge Street

New Product Briefs (Continued)

Motor Base Reduces Down Time

J-6 Lost production due to stretched and sagging belts have been virtually eliminated by Adjusto-Slide Motor Base, manufactured by **The American Pulley Co.**, 4200 Wissahickon Ave., Philadelphia 29, Pa. With this base, belt take-up is accomplished by adjusting only one screw, an adjustment that is safely made without even stopping the motor.

Replacement of belts is just as simple, for the adjusting screw on most models can be loosened and swung aside, freeing the top plate and the motor to move far enough for removing the old and installing the new belt. Once the new belt is in place, the motor is moved back in place, the adjusting screw swung back, tightened and the machine is back in operation.

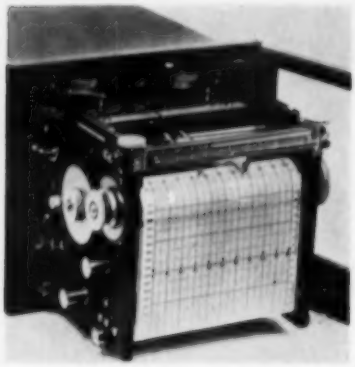
Cast Iron Gate Valve

J-7 Ni-Resist Type 2 cast iron gate valves with type 316 stainless steel trim, available from **Jenkins Bros.**, 100 Park Ave., New York 17, N. Y., show unusual resistance to corrosion and erosion in services that involve acids, salt and alkaline solutions, sea water, brine or other corrosive fluids, vapors or gases.

Copperfree, they will not discolor or contaminate products being carried in the line. Folder No. 205 gives full information.

Recording Potentiometer

J-8 A new recording potentiometer by **Westronics, Inc.**, 3605 McCart, Fort Worth, Texas, features 2 pens both writing margin to margin on a single 5-inch strip chart, producing two continuous records in a smaller space than that previously required for two 3-inch recorders and with better accuracy.



The recorder is available with one front set limit switch and 3 back set limit switches on each pen. The amplifiers are completely transistorized, requiring less volume and maintenance than ordinary vacuum tube amplifiers.

The instrument features such specifications as 0.5 percent accuracy on each pen, sensitivity 0.14 percent of scale span, maximum source impedance of 1000 ohm per MV of span, MV or TC calibration case extends only 13 in. behind the panel face.

Optional features include transmitting slidewires, quick change or manual change gears for 3 speed chart drive, selsyn motor or synchronous motor chart drive, automatic reference junction compensation, table or panel mounting and margin marker pens.

Condensers—Capacities up to 15 Million Btu/Unit

J-9 **Niagara Blower Company**, 405 Lexington Ave., New York 17, N. Y., has developed new models increasing the capacity of their "Aero" Vapor Condensers up to 15 million Btu per unit. They replace barometric type condensers when needed to conserve water and to provide higher vacuum for evaporators used in chemical process, food industries, etc.

Purpose of the "Aero" condensers is to achieve lower condensing temperature and more effective subcooling, providing better separation of non-condensibles to increase the yield and obtain a purer and more highly refined product. Operation obtains higher vacuum, is economical, saving steam and power as well as nearly all of the condensing water consumed by barometric type condensers.

Steam or vapor is condensed in tubes over which water is sprayed, removing the heat by evaporation in a stream of air, conducting the heat outdoors. Air, or non-condensible gas, that is mixed with the vapor or steam to be condensed, is removed by means of a steam ejector nozzle or a vacuum pump.

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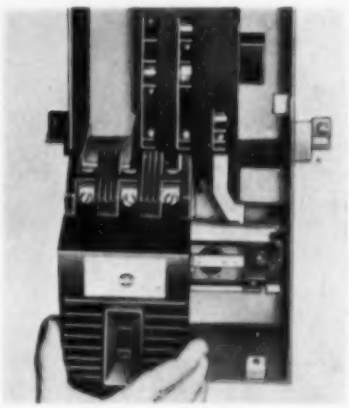
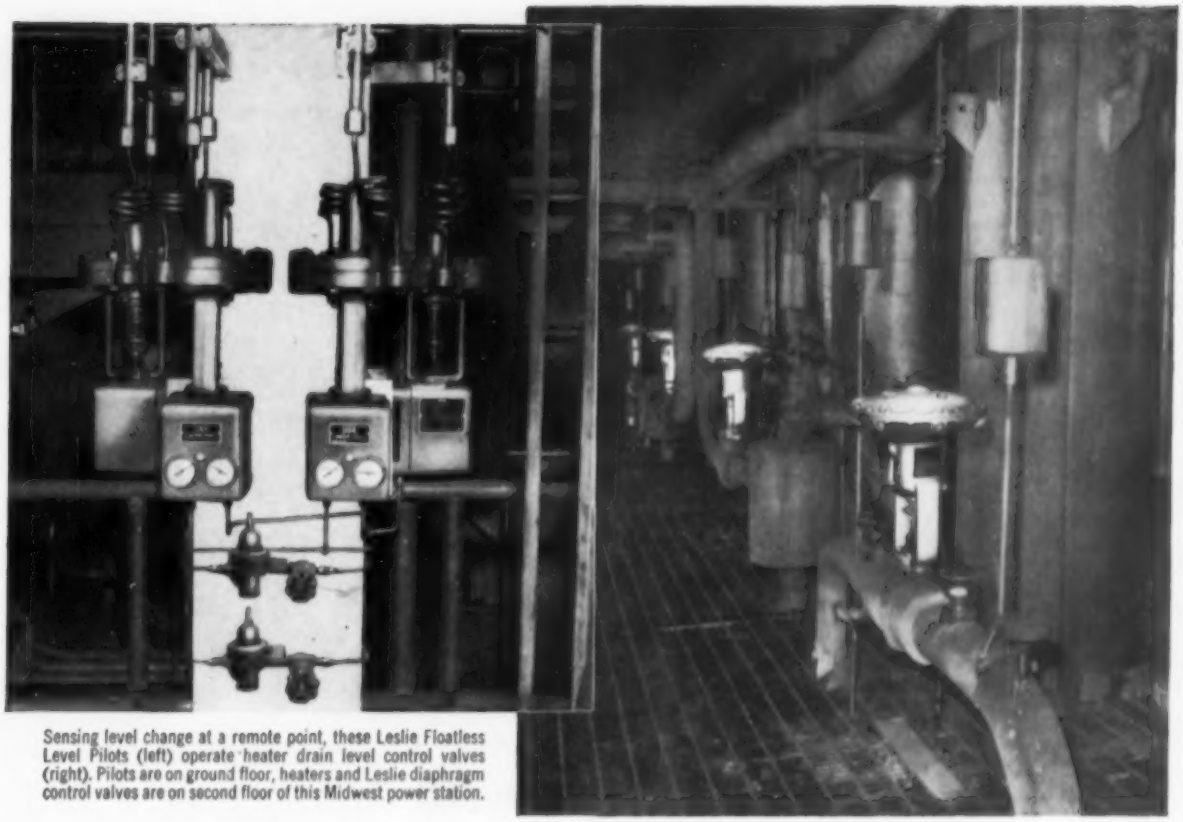


Plug-In Disconnect Unit

J-10 A single bus duct plug-in disconnecting unit that can be used for all ratings from 15 amperes, 250 volts to 100 amperes, 600 volts has been announced by **Federal Pacific Electric Company.** Designed to further simplify inventory and installation problems, the device accepts the same E and F frame molded case StABreakers now used interchangeably in the company's line of AB-Is and distribution panelboards.

Enclosures are supplied with an interlocking cover that prevents opening when the breaker is in "on" position. A positive handle mechanism, that may be padlocked, plainly indicates "on," "off" or "tripped" breaker position.



Sensing level change at a remote point, these Leslie Floatless Level Pilots (left) operate heater drain level control valves (right). Pilots are on ground floor, heaters and Leslie diaphragm control valves are on second floor of this Midwest power station.

differential pressure method offers

STABLE, FASTER-SENSING LEVEL CONTROL

Because the Leslie Level Control Pilot uses the differential method for sensing changes in liquid level, it receives its impulse changes faster than any other type of level control. You can install it *anywhere* below liquid level, mounted on the valve, or at a point remote from vessel or valve. Used on either open or pressurized vessels, it controls the level of virtually any liquid including water, gasoline, oil, alcohol, solvents, chemical solutions and acid.

And It's Floatless, too!

There are no floats, torque tubes, seals, stuffing boxes or thermal-hydraulic tubes which are affected by turbulence, wear or temperature changes. Installation is fast and uncomplicated. Simple spring adjustment changes set point. Maintenance free, rugged "high impact" design is unaffected by shock. The only *one* moving element is virtually frictionless . . . its total movement is only .006".

Responds Fast . . .

A high air loading capacity in the Leslie Control Pilot means a fast response with a smooth, throttling action free from hunting or cycling.

More Information

Ask your Leslie engineer to give you the complete story of the exclusive features that make Leslie Control Pilots ideal for level control problems. He's listed in your classified telephone directory under "valves" or "regulators"

Send for the engineering data bulletin No. 5303.

TRADE LESLIE MARK

REGULATORS AND CONTROLLERS

LESLIE CO., 261 GRANT AVENUE, LYNDHURST, NEW JERSEY

606

New Product Briefs (Continued)

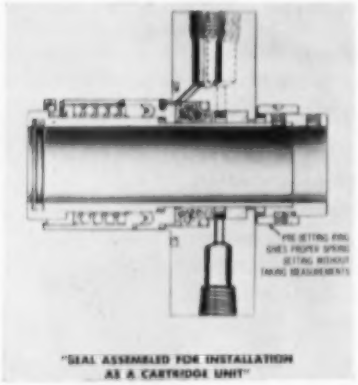
Plastic Drainage Systems

J-11 **Alpha Plastics, Inc.,** Livingston, N. J., announces the availability of polyvinyl chloride pipe and drainage fittings for complete PVC drainage systems to handle corrosive liquid wastes. PVC drainage systems are more economical and easier to install than the cast iron, high silicon iron or ceramic lines which they replace.

Alpha PVC pipe and fittings have smooth internal walls and are designed to eliminate crevice corrosion and provide optimum flow. The pipe, Schedule 40 IPS, is available in standard lengths of 10′ and 20′ and in nominal sizes of 1½″ to 4″. The molded socket-type fittings come in all needed styles: 90° short Y branch tee, 45° Y branch, T-Y cross, coupling, 90° short branch cross, and socket to socket and threaded to socket increaser bushings. Socket-type fittings are pitched ¼″ per foot to facilitate assembly.

Mechanical Seal Installation

J-12 Perfect mechanical seal installation without measurement is now "built in" with the new **Byron Jackson Pumps,** Inc., Box 2017A, Terminal Annex, Los Angeles 54, Calif., exclusive Pre-Setting Ring feature.



"SEAL ASSEMBLED FOR INSTALLATION AS A CARTRIDGE UNIT"

Anyone with simple hand tools now can perfectly install or replace BJ mechanical seals with Pre-Setting Ring without taking measurements or referring to installation drawings.

This new development provides a seal assembled as a cartridge unit ready for installation. No field fitting is required. The BJ Pre-Setting Ring is attached to the shaft sleeve collar with a set-screw in a slot of controlled length. The "packaged" seal is slipped onto the shaft and into the stuffingbox. The seal flange is bolted to the stuffingbox and the shaft sleeve collar fastened to the shaft. The Pre-Setting Ring is then moved the length of the set-screw slot and locked in place. This places the seal in precise running position with the spring compressed to its proper tension.

Aluminum Ell Jacket For Insulated Pipe

J-13 A preformed, two-piece aluminum ell jacket for insulated pipe lines has been introduced by **Preformed Metal Products Company** (Premetco) 201 Airport Drive, Shreveport, La.

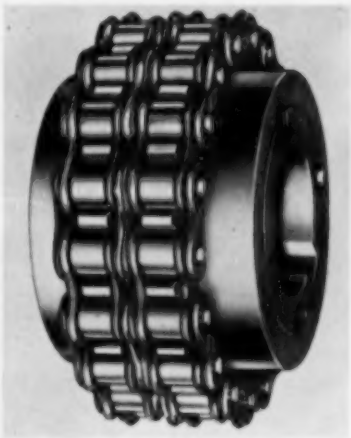
The two-piece device, christened "Aluminel" by its makers, is described as "the long-sought replacement for unsightly, temporary and costly weatherproofing of insulated pipe ells in refineries and chemical plants." It snaps together longitudinally around the ell and joins smoothly with straight jacketing.

Patents are pending on the Aluminels, which are available in 90-degree angles for seven sizes of pipes — 2″, 3″, 4″, 6″, 8″, 10″ and 12″. Variations are available in each size for 1″, 1½″, 2″, 2½″ or 3″ insulation.

Premetco engineers say that Aluminels achieve a considerable saving in initial cost, installation and maintenance expenses compared to poultry-wire-and-mastic ell coverings. An Aluminel for 3″ pipe with 1″ insulation lists at $2.01, and can be installed by one man in less than ten minutes.

Aluminels may be fastened to the insulated pipe ells by strapping, sheet metal screws, or adhesives. Premetco recommends the latter, and is manufacturing a special adhesive for this purpose.

All Aluminels are coated internally with an epon vapor seal barrier.



Flexible Shaft Couplings

J-14 Steel double roller chain shaft couplings by **Diamond Chain Company,** Dept. 612, 402 Kentucky Ave., Indianapolis 7, Indiana, are now available with interchangeable taper bushings, supplied with bores in increments of 1/16″ so that all standard shaft diameters can be met from stock.

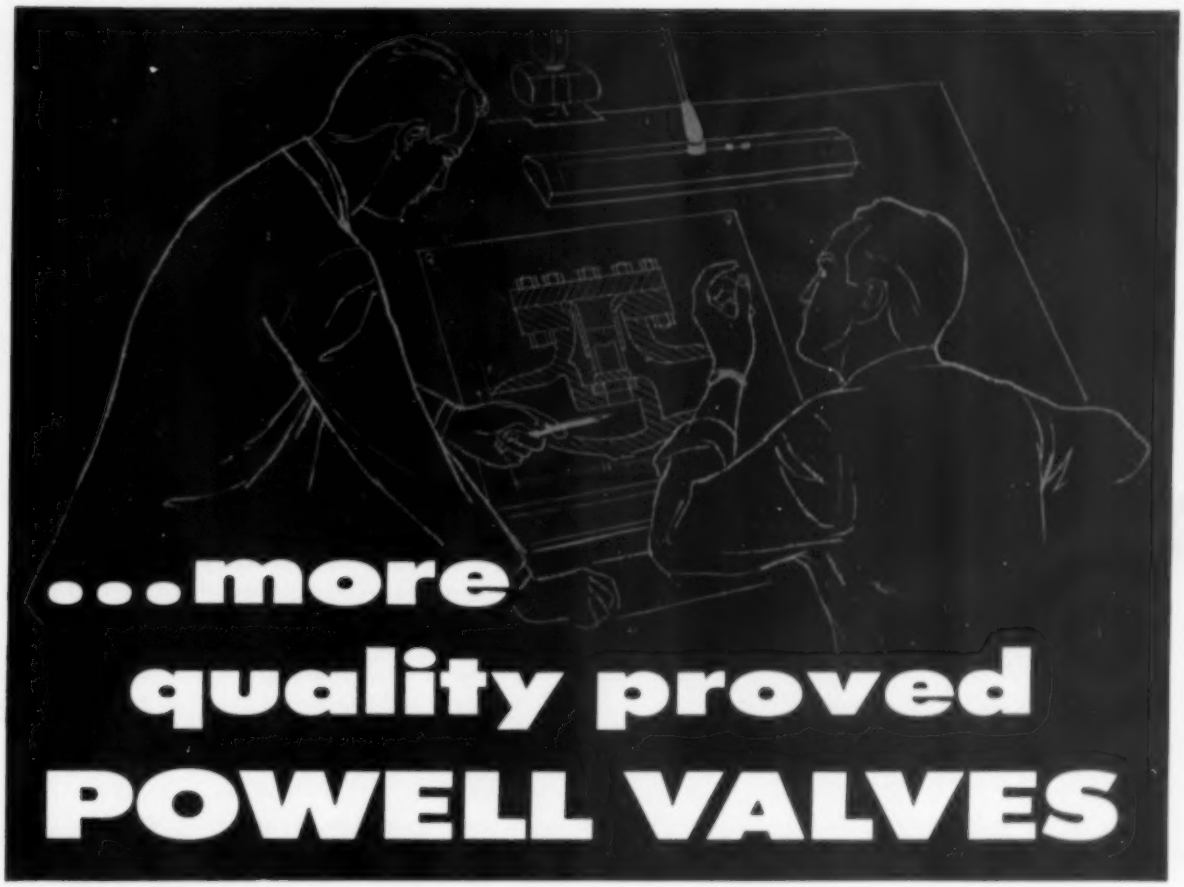
Couplings are easily installed on shafts, absorb moderate end play and misalignment, provide long service, and can be coupled and uncoupled by the removal of a single roller chain connecting pin.

For More Free Data CIRCLE CODE NO. on the Handy Return Card — Page 95

600 lb Steel Wedge Gate Valve for High Temperature

J-15 For water, steam, gas or air service at temperatures up to 850 F and for oil or oil vapor up to 1000 F, a new line of 600 lb steel wedge gate valves has been designed by the **Walworth Company,** 60 E. 42nd St., New York, N. Y.

Valves are available with screwed or socket welding ends. Those with a union bonnet are available in eight sizes from ¼ to 2 in.; those with bolted bonnets, in six sizes from ½ to 2 in.



...more quality proved POWELL VALVES

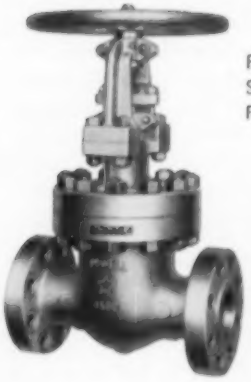


FIG. 1303 SS—1500-Pound Stainless Steel Gate Valve for handling Boiler Feed Water Treating Compound.

FIG. 3061 WE—300-Pound Steel Swing Check Valve.

FIG. 1314 A—1500-Pound Integral Bonnet Steel "Y" Valve.

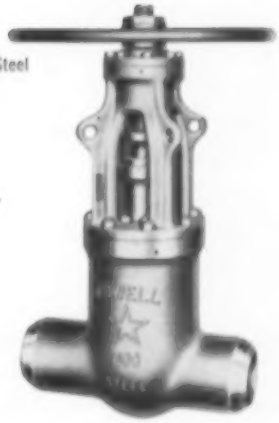


FIG. 16003 WE—600-Pound Steel Pressure Seal Gate Valve.

Designed for long life, designed for dependable service

Consult your Powell Valve distributor for all the facts about quality proved bronze, iron, steel and corrosion-resistant valves. No matter what the flow control problem, a Powell Valve can solve it . . . *better.*

THE WM. POWELL COMPANY, CINCINNATI 22, OHIO . . . 111th YEAR

What good is specialized business publication advertising?

Frank Kistenberger
Metallizing Engineering Co., Inc.

Sells industry

No one is in a better position to give a hard-boiled, practical answer to this question than the men who spend their working lives on the sales front . . . the men the ads are supposed to help . . . the men who sell.

Here is the statement of a salesman who knows what advertising does for him when it appears in the industrial, trade or professional publications that serve the specialized market to which he sells:

Says Mr. Kistenberger:

"I happen to know that better than 50% of my sales to new companies can be traced to leads from our business paper advertising. Another 25% of my sales to new owners I close after following up leads that can't be traced directly to our advertising, but I know darn well that that's where they come from because that's about the only place they could learn about our metallizing systems.

"It's been my experience that our trade advertising is getting to the right people. In many cases this man is an executive who is hard to see on a cold call. But he's a guy that will take the time and trouble to read and he's just the one to drum up interest in metallizing down the line in his company. In other words, you get more action if the suggestion comes down to the production department or the plant engineer from this executive. Of course, I don't mean to say that people will just read about a product like ours and instruct someone to write out an order. It's not that simple. But they do know about metallizing from our advertising and sometimes a surprising amount. That was particularly true of our new ceramic spraying equipment which was introduced last year and which got us into fields we'd never been in before. I think that getting a new product known is usually a pretty tough job but the leads our advertising got us were a big help in reaching the right people."

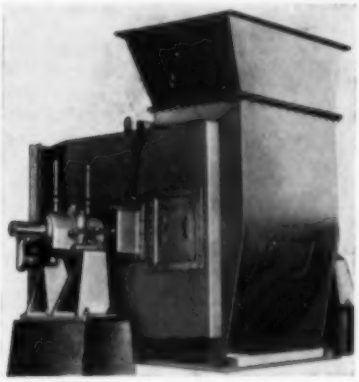
Why not ask your own salesmen what your company's business publication advertising does for them. If their answers are generally favorable you can be sure that your business publication advertising is really helping them sell. If too many answers are negative it could well pay you to review your advertising objectives — and to make sure the publications that carry your advertising are read by the men who must be sold.

Southern Power & Industry

NBP

One of the 207 members of National Business Publications, Inc. ...each of which serves a specialized market in a specific industry, trade or profession.

New Products (Cont'd)



Induced Draft Equipment

J-16 The new Type DN Dynacurve Fan by **Clarage Fan Company**, Kalamazoo, Michigan, has an all welded fan wheel built with 36 aerodynamically curved blades whose unusual shape is claimed to result in a low tip speed characteristic.

Fans are built in standard tip speed designs ranging to 14,000 fpm. They can be direct driven by standard moderate speed motors. Catalog 905 gives details.

For More Free Data CIRCLE CODE NO. on the Handy Return Card — Page 95

Vertical Submerged Centrifugal Pump

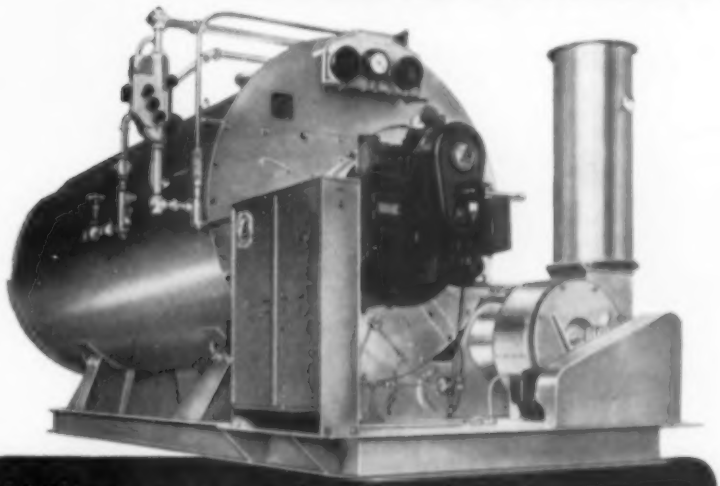
J-17 **Brown & Sharpe Mfg. Co.**, Providence, R. I., has announced a new vertical submerged type centrifugal pump called the "Midget Hi-Flow." The pump is equipped with an integral ⅛ hp 3 phase or 1/10 hp single phase motor. The motor is totally enclosed with a N.E.M.A. standard flat face mounting and is designed for continuous duty.

The unit is designed for immersion in liquid to a depth of 5¾", with the motor mounted 2" above the maximum liquid level. The liquid flows from the impeller through two cored passages within the pump body, with a ⅛" pipe connection above the mounting flange.

This pump is suitable for supplying coolant for machine tools and light machinery, for use where dirt or abrasives may be present in the liquid, and for light transfer work.

SAFEST—
MOST EFFICIENT

Preferred
UNIT STEAM
GENERATOR



Where gas is the fuel—
INDUCED DRAFT is a MUST
for healthful operation

The Preferred Units operate under a negative pressure, with the Induced Draft Fan *completely* purging the *entire* pressure vessel of any stray raw gases before and after firing.

During combustion there is no possibility of noxious fumes entering the boiler room or surrounding areas.

Other significant differences in Preferred design are

1—The only Unit with a tube sheet protective device.

2—The only Unit with a precipitator for cleaner operation.

3—Substantially lower off-period losses.

4—Up to 95 per cent greater steam storage for smoother operation and faster response to steam demand.

5—Up to 65 per cent greater evaporation area for drier steam.

6—As much as 50 per cent saving in electrical consumption.

7—Heavier material and more rugged construction.

8—The highest available guaranteed thermal efficiency of either fire tube or water tube "package" boiler design.

Preferred Unit Steam Generators, though higher in initial cost, return substantial dividends in overall savings year after year after year for 25 years and more.

Write for "tell-all" Bulletin 2000.

PREFERRED UTILITIES MFG. CORP.

1860 BROADWAY Dept. SP NEW YORK 23, N. Y.

Continental
Belt Conveyor ACCESSORIES

Precision built to highest standards for dependability and economy of operation. Stocked for immediate shipment—*call, wire or write your nearest Continental office.*

CG-5719

INDUSTRIAL DIVISION
CONTINENTAL GIN COMPANY
BIRMINGHAM, ALABAMA

ATLANTA · CLEVELAND · DALLAS · KNOXVILLE
MEMPHIS · MOBILE · NEW YORK 17

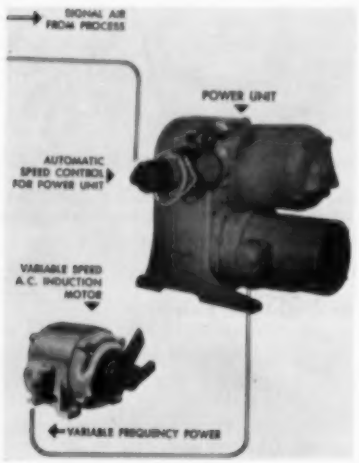
New Products (Cont'd)

All-Plastic Check Valve

J-18 Lift check valve by the **Walworth Company,** 60 East 42nd St., New York, N. Y. is made of normal impact rigid polyvinyl chloride to provide high corrosion resistance to alkalis, acids, inorganic salt solutions, etc. Highly durable plastic spring positions the disk.

Plastic valve operates successfully at pressures up to 150 psi at 75 F. Complete shutoff was obtained with the valve during and after 2 million continuous cycles under 125 lb of air and 50 lb of water. It is available for pipe from ⅛ thru 2 in. in size, and comes in either threaded, solvent-weld socket-type or flanged ends.

For More Free Data CIRCLE CODE NO. on the Handy Return Card — Page 95

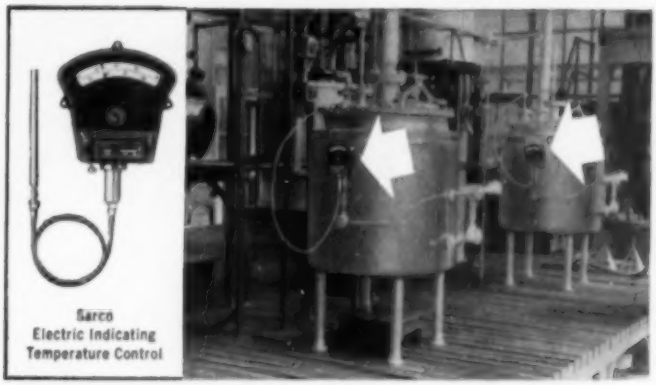

SIGNAL AIR FROM PROCESS
POWER UNIT
AUTOMATIC SPEED CONTROL FOR POWER UNIT
VARIABLE SPEED A.C. INDUCTION MOTOR
VARIABLE FREQUENCY POWER

Variable Speed System

J-19 A variable speed, multiple drive system that can be automatically controlled in response to a variety of input signals has been developed by **U. S. Electrical Motors, Inc.,** Box 2058, Terminal Annex, Los Angeles 54, Calif. Details are in Bulletins No. 1910 and No. 1882.

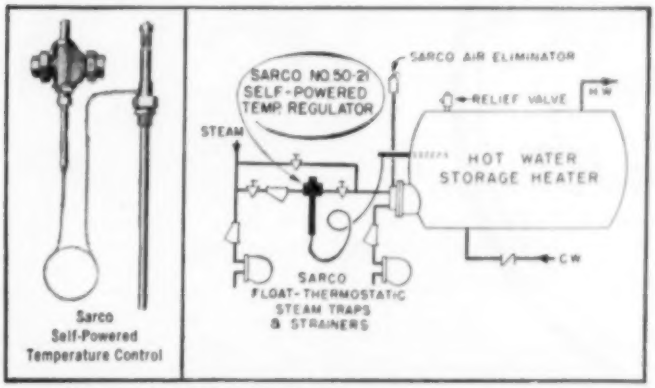
System combines Varidyne (power unit and one or more a-c induction motors) and Varitrol (an automatic pneumatic control system). Combination makes it possible to automatically change speeds of several motors equally and simultaneously.

End uncertain temperature control this simple low-cost way



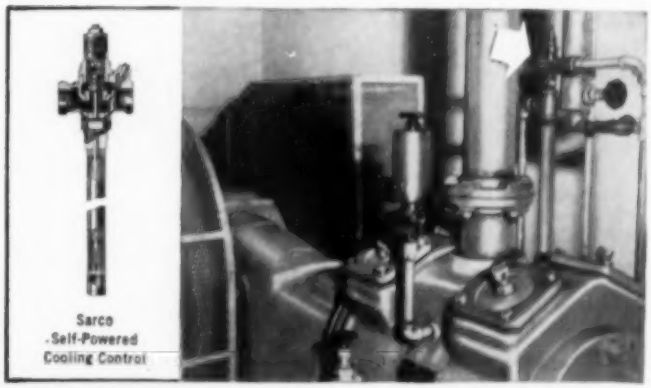
Sarco
Electric Indicating
Temperature Control

STILLS – jacket water temperature of stills held to within ± ½°F. *Other typical applications* – kettles, sterilizers, chemical tanks, plating tanks, processing vats, etc.



Sarco
Self-Powered
Temperature Control

HOT WATER STORAGE HEATER – desired water temperature is automatically maintained. *Other typical applications* – dryers, oil storage tanks, kilns, heat exchangers, etc.



Sarco
Self-Powered
Cooling Control

COMPRESSORS – controls temperature of cooling water, prevents overcooling and undercooling in compressors, aftercoolers and intercoolers. *Other typical applications* – small engines, condensers, ball mills, water-cooled bearings, lubricating oil coolers, etc.

SARCO Automatic Temperature Controls

Electric Indicating and Self-Powered

Simple—Dependable Inexpensive

YOU CAN get rid of costly, hit-or-miss manual temperature control . . . without investing in expensive equipment.

These Sarco Automatic Controls are simple, inexpensive, dependable. They're ideal for hundreds of temperature regulating jobs . . . all but the few specials that call for costly, elaborate controls.

Electric Indicating Controls by Sarco are simple, sensitive . . . perform many of the functions of much more elaborate recorder-controllers, at fraction of their cost. Responsive to temperature changes of ± ½°F. Cost . . . only about $100.

Sarco Self-Powered Controls need no outside power source. Self-contained. Packless. ½" size temperature controller . . . only about $100. ¼" size cooling control...only about $39.

Users of Sarco Controls include Colgate-Palmolive, Sinclair Refining, Swift, Ingersoll-Rand and hundreds of others.

WRITE FOR BULLETINS

No. 1025 – Electric Indicating Temperature Controls

No. 620 – Self-powered Temperature Controls

No. 710 – Self-powered Cooling Controls

Sarco Company, Inc., Empire State Bldg.
New York 1, New York

2234-B

SARCO

Automatic Temperature Control

ELECTRIC INDICATING AND SELF-POWERED TEMPERATURE CONTROLLERS • STEAM TRAPS • STRAINERS

New Products (Cont'd)

Welding Electrode for High Tensile Alloy Steels

J-20 A new fully heat treatable all-position electrode (EutecTrode 71 AC-DC) for fabrication of chrome-moly steel and other high tensile alloy steels has been developed by **Eutectic Welding Alloys Corporation**, 40 172nd St., Flushing, New York, N. Y.

Featuring extreme ease of application regardless of current or position, the new "Low Amp" electrode is designed mainly for low alloyed steels, particularly the 4130, 4140 and 8630 grades. Deposits have similar heat treating characteristics as the base metal. EutecTrode 71 AC-DC conforms to requirements of an E10013 electrode. It exhibits a deposited tensile strength to 100,000 psi.

Specific end uses include fabrication of tanks, containers and vessels for high pressure work.

EutecTrode 71 AC-DC can be used with reverse or straight polarity on DC. It is particularly adaptable to overhead and vertical down welding. Full slag coverage is easily removable revealing dense, uniform deposits. Closely controlled solidification rate permits bridging of poor fit gaps without danger of burn-through. It is ideal for overlaying surfaces subjected to frictional wear, providing economical extension of service life.

EutecTrode 71 AC-DC is now available in 3/32, ⅛ and 5/32 in. sizes.

COMBUSTION EQUIPMENT
ENGINEERED BY THE WEBSTER ENGINEERING COMPANY

Another first by WEBSTER

Flame Retention
RING GAS BURNER

Through a *new* application of an old basic principle WEBSTER now offers unequalled stability in an non-premixing ring gas burner.

Presently packaged as Series H, Forced Draft for Gas, Rotary Oil or Combination this revolutionary development will soon be available in other variations.

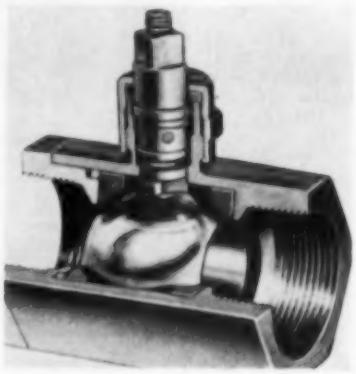
Some Territories Open

Write for Series B13 literature.

The WEBSTER ENGINEERING Company

TULSA 16, OKLAHOMA

Division of SURFACE COMBUSTION CORPORATION, Toledo, Ohio



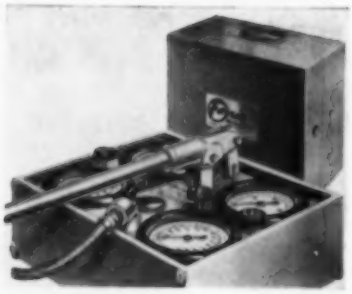
Ball Valve Line

J-21 The 3" and 4" "Double Seal" Ball Valves now marketed by the **Jamesbury Corporation**, 45 New St., Worcester, Mass., offer the same design advantages which are making the line universally popular wherever fluid flow is a factor.

Jamesbury engineers have succeeded in eliminating high turbulence and leakage tendencies found in other type valves. The 3" and 4" valves, with their unit-body construction, have eliminated the valve bonnet which was the primary cause of leakage.

The 3" and 4" valves feature full-flow and quarter-turn operation and have currently wide application in the petroleum, atomic energy, vacuum and food processing industries, among others.

These valves are made in aluminum, bronze, 316 stainless steel and carbon steel. Seat and seals available in Buna-N, Neoprene, "TEFLON" and synthetic rubbers. Remote controlled operators can be supplied for these 3" and 4" valves, as for all other Jamesbury valves.



Portable Unit for Hydrostatic Testing

J-22 The new 55 lb "Porta-Tester" by **Farris Engineering Corporation**, 630 Commercial Ave., Palisades Park, New Jersey, is designed for at-the-site hydrostatic testing of valves, piping, pump cases, etc., to pressures up to 3000 psi.

Unit complete with four test-accuracy gauges and 8 ft of hydraulic, flexible tubing, can be used with water or other hydraulic fluids.

For More Free Data CIRCLE CODE NO. on the Handy Return Card — Page 95

Hard Surfacing Maintenance

J-23 "Hard Surfacing Maintenance — Industry's Economy Weapon," a new free 20-page technical publication on overlays (TIS 2821) is now available from Technical Information Service, **Eutectic Welding Alloys Corporation**, 40-40 172nd Street, Flushing 58, New York, N. Y.

A special issue of Eutectic's semi-monthly Technical Information Digest, the new publication treats wear and the need for overlays for abrasion, corrosion, friction, heat and impact. 57 photos illustrate overlay applications and hard surfacing welding procedures.

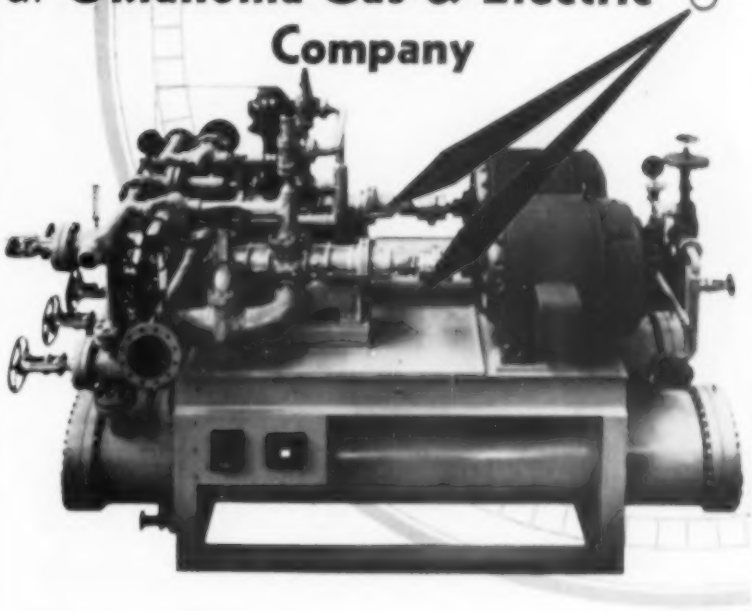
Overlay applications are discussed for all metals. Hard surfacing for the tool room, mines, railroads, earth moving equipment and many other wear preventive applications is described.

An important section of the publication tells how to minimize heat input and warping, distortion, cracking, embrittlement and other damage to base metals during overlaying. Photomicrographs show the advantages of shallow penetration, minized dilution and smallest possible heat affected zone. A check list is provided to help the weldor determine which of 15 characteristics his overlay deposit should exhibit.

WARREN SCREW PUMPS

work 'round-the-clock

at **Oklahoma Gas & Electric Company**



Pumping heavy fuel oil

to the boilers at the RIVERBANK STATION of the Oklahoma Gas & Electric Company is a full-time job for these two Warren Screw Pumps (#5¼ Long Body)

For many months they have been providing 24-hour-a-day service at full efficiency for this important installation:

The heavy fuel is fired in a radiant type boiler with nominal steam capacity of 1,200,000 pounds per hour. The steam-driven turbo generator has a nominal capacity of 170,000 KW, and the turbine operates at 1800 PSIG and 1000°F. at the throttle valve, with reheat to 1000°F.

Operating temperature of the #6 Bunker "C" fuel oil is 100° to 225°F.; capacity is 225 GPM; discharge pressure is 675 PSIG; and using 150 HP—1150 RPM electric motors.

Warren Pumps are most important to the uninterrupted functioning of this installation. Like so many other power companies throughout the country, Oklahoma Gas & Electric Company is completely "sold" on Warren for long, dependable pumping service.

WRITE FOR BULLETINS S205 AND S206

WARREN — CENTRIFUGAL · SCREW · RECIPROCATING · ROTEX

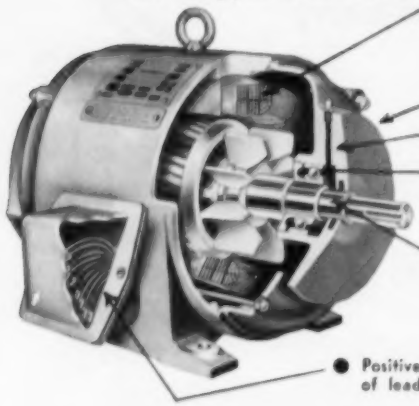
WARREN PUMPS, INC.

WARREN, MASSACHUSETTS

P-58

STAMINA of BROOK A.C. MOTORS is no coincidence!

Design is based on over half a century of experience. Built to surpass NEMA Specifications, yet cost no more than ordinary motors. Single and polyphase. All major types. 1 to 600 HP. Shipped from stock.



- Long-life windings are triple impregnated and baked.
- Internally-ribbed, shock resistant iron frame.
- Generous bearing lubrication capacity.
- Bearings two sizes larger than customary; yet, still replaceable from any standard bearing stock.
- High tensile steel, precision ground shaft and balanced rotor assembly.
- Positive identification of leads.

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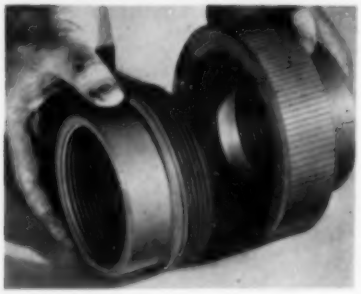
New Products (Cont'd)



3-Inch PVC Pipe Union

J-24 The first plastic 3-in. screwed pipe union has been introduced by the **Walworth Company**, 60 East 42nd Street, New York, New York. The large union, made of highly corrosion resistant rigid polyvinyl chloride, increases PVC piping application possibilities which have been limited by the availability of only smaller sized unions. PVC piping systems are used to handle corrosive fluids in food and chemical processing industries, the refining industry and in the paper and marine fields.

Specially designed surfaces in the joints of the three-part union provide a tight seal against flow leakage. The PVC material is exceptionally resistant to most salts, alkalis and acids at temperatures as high as 150 F, and it is equally resistant to corrosive elements in factory atmospheres and operations.

Weighing about a pound and a half, the 3-in. union is easily handled and installed. A knurled ring provides a better grip to further simplify installation.

The new union is available with threaded or solvent-weld socket-type ends in either high- or normal-impact PVC.

For More Free Data CIRCLE CODE NO. on the Handy Return Card — Page 95

PVC Lift Check Valve

J-25 The first all-polyvinyl chloride lift check valve is now on the market in commercial quantities. It was designed and introduced by **Tube Turns Plastics, Inc.**, 2929 Magazine St., Louisville 11, Ky.

The new lift check valve is sim-

ple, durable and efficient. It will operate in either a vertical or horizontal position, and open and close under less than six pounds of pressure. A full 100% flow area is provided. The valve's only moving part is a self-energizing disk. It is available in ½", ¾", 1", 1¼", 1½", 2" and 3" sizes, and in threaded or socket welding types. The material is normal impact PVC.

The valve incorporates the principle of a PVC pipe union for which a patent application has been made. This arrangement permits the valve to be easily and quickly removed from the line for cleaning and servicing when required.

Modified Megger Tester

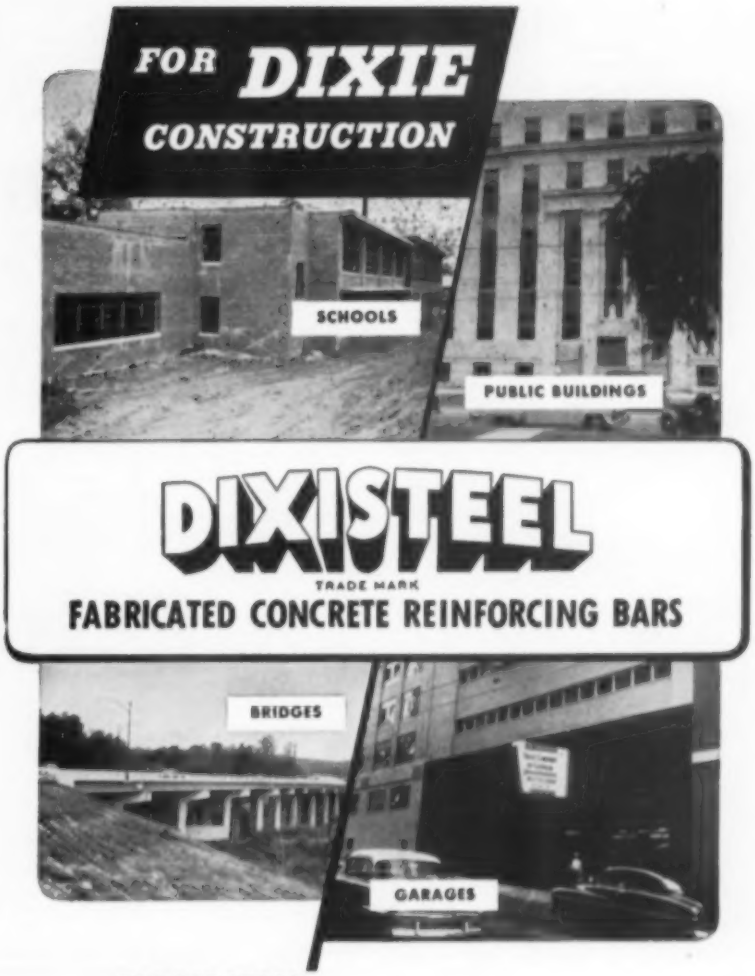
J-26 A new 4-position switch has been introduced on the Meg type of Megger insulation tester manufactured by the **James G. Biddle Co.**, 1316 Arch St., Philadelphia 7, Pa. The new switch, adding increased versatility, includes:

1. Ratio Switch (A switch) which divides by 10 the regular megohm scale. Thus an instrument having a normal range of 0 to 1000 megohms also has, with the ratio switch, a range of 0 to 100 megohms, permitting insulation resistance measurement down as low as 10,000 ohms.

2. Discharge Switch (K switch) permits the discharge of capacitance in the apparatus under test. Charge is built up during the test because the test voltage is d-c.

3. Ohm Scale (R switch) has range from 0 to 10,000 ohms. With it tests can be made of conductor resistance without resorting to other test equipment. The Ohm scale is used in addition to and independently of the Megohm scale.

Engineering details and prices are included in Bulletin 21-45a.



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NEW Catalogs & Bulletins

STEAM TURBINES . . . FURNACES BOILERS, STOKERS, BURNERS

3—Boiler Seam Protector — Catalogue sheet describes and illustrates why H. R. T. boilers need refractory seam protection. — NATIONAL BOILER PROTECTOR CO.

9—Free Coal Counseling — General information on how Coal Bureau engineers will advise on selection, transportation and utilization of the right coal for your purpose.—NORFOLK AND WESTERN RAILWAY.

10 — Water-Cooled Stoker — Catalog describes completely water-cooled Vibra-Grate stoker which burns low grade fuels without smoke at either low or high ratings. No dust collectors necessary.—AMERICAN ENGINEERING COMPANY.

12—Steam Turbines — Advances in design of double and triple-flow tandem ratings to 250 mw, and of 3600/3600 rpm and 3600/1800 rpm closed-coupled cross-compounded arrangements to 500 mw and larger, described in Catalog O3R8620. — Power Equip. Div., ALLIS-CHALMERS.

14—Generator Installations — Bulletin GB-1 shows how installations of Amesteam Generators have solved boiler room problems for their owners. Photos illustrate units from 10 through 600 hp for firing combinations of oils and gases. — AMES IRON WORKS, INC.

35 — Unit Steam Boilers — Catalog AD-100 — Gives complete information on oil and gas fired "Self Contained" boilers, 15 to 500 hp, 15 to 250 psi for processing and for heating. Gives features, applications, efficiencies, capacities and dimensions.—CLEAVER-BROOKS CO.

48—Boiler Tubes — Booklet gives information on care of boiler tubes, causes of chemical attack, etc. Contains charts of weights, working pressures, etc., for boiler tubes and pipe. — BOILER TUBE COMPANY OF AMERICA.

60—Standardized Generators — Pre-engineered units, available for oil or gas firing, in capacities from 50,000 to 150,000 lb/hr for pressures to 1500 psi and super-heated steam temperatures to 950 F, described in Bulletin B-55-4.—FOSTER WHEELER.

62—Firing Unit — LoStokers efficiently fires small boilers; either firebox or brickset applications; capacity range 3,000 to 12,000 lb/hr. —DETROIT STOKER COMPANY.

83—Steam & Hot Water Generators — Booklet describes company's line of fifteen compact models from 18 to 500 hp (15 to 200 psi). Only five connections needed; no special foundation.—CYCLOTHERM DIVISION.

85 — Blow-Off Valves — Bulletin E-125 describes design and construction of quick-operating valves, angle valves, Y valves and duplex units specifically designed for boiler blow-off service. — EVERLASTING VALVE CO.

87—Steam Turbines—Single Stage—Bulletin 500 describes features and characteristics of company's type DH steam turbines in horizontal and vertical models. — DEAN HILL PUMP COMPANY, INC.

89—Solid-Wheel Turbine — Bulletin S-116 gives complete details on Terry solid-wheel turbo-geared units; blades cannot foul; no need for close axial blade clearance. — TERRY STEAM TURBINE COMPANY.

90—Package Boilers — Capacities from 4,000 to 40,000 lb/hr; pressures to 500 psi; oil or gas fuel, described in Catalog VP-3.—COMBUSTION ENGINEERING.

91—Steam Generators — 18 sizes, from 20 to 600 bhp, for pressures to 250 psi, also for hot water. Complete details in Catalog 811F. — SUPERIOR COMBUSTION INDUSTRIES, INC.

FANS—PUMPS—COMPRESSORS HEATERS—HEAT EXCHANGERS

101—Heat Exchangers — Bulletin 1-1K5 describes exchangers widely used on engines, compressors and other machinery for cooling lube oil, jacket water, air and gas. Compact, standardized units in wide range of sizes. — ROSS HEAT EXCHANGER.

110 — Deaerator — Publ. 4651 describes design that eliminates tubular vent condensers without impairing efficient purging of non-condensible gases. Unit handles wide range of operating conditions. — COCHRANE CORPORATION.

127—General Fans — Bulletin T-158 — A general catalog — describes company's complete line of fans, including large commercial and industrial type fans designed to properly ventilate plants and other enclosures, and increase morale and efficiency. — THE EMERSON ELECTRIC MFG. CO.

128—How to Solve Pumping Problems—Booklet, 36 pages — Explains the functions and characteristics of Rotary gear pumps; sample application problems with charts and curves on pipe friction losses, viscosity conversion tables, materials of construction for various liquids, and additional information pertaining to pump applications.—GEO. D. ROPER CORPORATION.

Note Your New Reader SERVICE on Advertisements

134 — Mechanical Draft Service — —"CR" radial wheel draft fans for stoker fired or pulverized coal boilers described in Bul. FD 205. Also handles air with dust loadings in wide range of industrial jobs.—BUFFALO FORGE COMPANY.

135—Heat Exchanger — Bulletin 132 shows how sectional Aero unit gives close temperature control, saves labor, power, and water; design improves heat transfer to outdoor air by evaporation; 7,000,000 to 18,000,000 Btu/hr capacity range. —NIAGARA BLOWER COMPANY.

139—Circulating & Coolant Pumps—Motorpumps for sidewall mounting or immersion installations described in Form 7444. No stuffing

boxes, no pump bearings and no couplings; high liquid levels permitted; low maintenance.—INGERSOLL-RAND.

142—Centrifugal Pumps—Full line of single stage horizontally split case centrifugal pumps described in 12 page Bulletin 721.6; capacities 200-6400 gpm; heads up to 260 ft; maximum standardization and interchangeability of parts. — GOULDS PUMPS, INC.

153—Chemical Process Pumps—Bulletin B-1608 covers Type DL & DM units with oil & grease lubricated bearing houses. Packing gland or shaft seal designs. Air or water cooled back plates. Heads to 430 ft; capacities to 800 gpm. Pressures to 400 psig. — PEERLESS PUMP DIV.

162—Condensate Return Pumps — Catalog No. H-1 includes photos, dimension drawing, selection tables, and operating data on "NCR" Single and "NCRD" duplex condensate return pumps, especially designed for low pressure steam heating systems and which handle condensate up to 200 F.—C. H. WHEELER MFG. CO.

182—Induced Draft Fans — Catalog 905 describes the new Type DN Dynacurve fans offering minimum floor space & height requirements, and high efficiency over wide performance range. — CLARAGE FAN COMPANY.

185—Screw Pump — Bulletin describes the new type TS — capacity to 600 gpm, pressure to 450 psi, viscosity to 150,000 ssu and speed to 3000 rpm. — WARREN PUMPS, INC.

INSTRUMENTS—METERS CONTROLS—REGULATORS

202—General Purpose Controls—32 p operation and application manual GEA-6372 explains what each product is, shows how product works and tells where devices can be applied. Covers manual, magnetic and reduced-voltage starters; push buttons; relays; limit switches; solenoids; pressure and vacuum, float and plugging & anti-plugging switches. — GENERAL ELECTRIC COMPANY.

221—Boiler Water Level Controls—Catalog describes exclusive magnetic operating principle. Low water cut-offs (single stage); pump controls; low and high water alarms; and water columns. Complete line 0-900 lb wsp.—MAGNETROL, INC.

225—Cooling Controls — Self-powered controls for compressors, stills, solvent coolers, degreasers, small engines, etc., described in Bulletin 710B; operational and hook-up sketches.—SARCO COMPANY, INC.

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408	409	417	419	425	427	448	456	464	470
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228—Gauge Illuminator — Supplement ML — Describes a high power mercury lamp in special housing to fit back of water gauge inserts, to increase visibility of water level reading.—RELIANCE GAUGE COLUMN CO.

235—Liquid Levels — Bulletin 532 describes indicator which gives a reliable, automatic reading of storage tank contents. 20" dial in 3 x 10" case saves panel space. No outside power source needed; can be located up to 250 ft from tank. — THE LIQUIDOMETER CORP.

242—Control Valves — Catalog 1500-B—Illustrated—Describes complete line of Domotor, solenoid-operated and handwheel single seat control valves for handling difficult fluids under extremes of temperature and pressure. Offers full, unrestricted flow, positive plug and seat alignment and directional flow flexibility.—THE ANNIN COMPANY.

253—Combustion Analyzer — 4 p Specification E65-5 describes the "Heat Prover" which indicates per cent by volume oxygen and combustibles present in exhaust gases from all types of boiler and industrial furnaces. — BAILEY METER COMPANY.

254—Pilot Pressure Controller—Bulletin D-4 — Describes the dependable Wizard pilot, Series 4100U, in a new gas type weatherproof case for flush or surface panel mounting, available with either bellows or Bourdon tube measuring elements for pressures from inches of water to 10,000 psi. — FISHER GOVERNOR CO.

256—Boiler Control — On-the-job report of Carolina Power and Light Company's Louis V. Sutton plant in Bulletin 1032. Features: combustion, feedwater, boiler feed pump re-circulation controls plus automatic sequential soot blowing. — COPES-VULCAN DIVISION.

287—Color-Port Water Gage —Bulletin WG-1814 describes the new gage for high pressure boilers (up to 3300 psi). Gives full details on design and operation and shows how it gives greater visibility and greatly reduced maintenance requirements. —YARNALL-WARING COMPANY.

PLANT EQUIPMENT—WELDING TOOLS—PROCESS SPECIALTIES

301—Metal Fabrication — Replacement parts for plant maintenance; Sheet, plate & light structural. Brochure describes engineering services for Southern industry. — ENGINEERING SALES.

315—Pressure Vessels—Catalog 100 discusses your plate fabrication problems and shows how company custom-fabricates hot water storage heaters, tanks, air receivers, blow-off tanks, etc. Corrosion resistant linings and materials featured. Suggested specifications and other valuable technical data given. — J. J. FINNIGAN CO.

317—Drier Compressed Air—Bulletin 130 shows how Aero After Cooler cools compressed air or gas below temperature of surrounding atmosphere; no further condensation in your air lines. Installed outdoors. Saves cooling water. Gives better operation of air-operated tools, etc. — NIAGARA BLOWER COMPANY.

318 — Wrought Iron — "ABC's of Wrought Iron"—A concise digest

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of more detailed technical handbook material on wrought iron—describes resistance to corrosion, fabrication process—where needed—shock and vibration endurance.—A. M. BYERS.

319—Portable Band Saw — Bulletin describes the Kalamobile, a portable metal-cutting band saw. Has rubber-tired 12" wheels and telescoping handles. Capacity 6" rounds — 10" flat. — Machine Tool Div. — KALAMAZOO TANK AND SILO CO.

334—Electric Power Hammer—Drilling, routing, cleaning, caulking, chipping are among many maintenance and construction applications described in Bul. 5199. Drills holes up to 1⅛" in diameter; 2300 blows per minute; weighs only 12 lb, 13 oz. — INGERSOLL-RAND.

336—Retaining Walls — Catalog RW 3555 shows how bin-type walls stabilize slopes and gain valuable ground for buildings, parking areas; all-metal cellular construction; all-bolted assembly means small crews can do the job.—ARMCO DRAINAGE & METAL PRODUCTS, INC.

340—Gas Fired Infra-Red Heaters—Bulletin PB 1-56 describes design and application of Panelbloc industrial - commercial infra - red heater. Requires no fan, blower or electrical connections. — THERMOBLOC DIV., PRAT-DANIEL CORP.

351—Steel Grating & Treads—Bulletin 2486 describes electroforged steel grating and treads, their advantages and typical successful applications. — BLAW-KNOX EQUIPMENT DIVISION, BLAW - KNOX COMPANY.

367—Industrial Track—How you can save with relaying rails outlined in Catalogs RT-9. Covers switch material and accessories. — L. B. FOSTER CO.

PIPING, VALVES, FITTINGS STEAM SPECIALTIES, TRAPS

401—Underground Pipe Insulation—4 p brochure L-102-F-56 discusses problems of underground pipe insulation and explains how Gilsulate's special properties overcome them. On-the-job photos illustrate ease and speed of application. Thermal coefficients of transmission and other technical data and specifications are given. — AMERICAN GILSONITE COMPANY.

402—Forged Steel Valves—32 page supplement of Catalog F-9 covers new general purpose gate, globe and angle valves for 150-800 lb service. Featuring hard faced seating surfaces. — HENRY VOGT MACHINE CO.

403—Valve Operators—Folder shows how re-designed sprocket rim makes any valve readily accessible from the floor. Simplifies pipe layouts, prevents accidents, fits all valve wheels. — BABBITT STEAM SPECIALTY CO.

408 — Wide-Range Valves — Data Sheet 10-5 covers the "Point 4 Factor Trim"—answer to those few types of applications where reduced capacity trim is desirable. Available in V-port and solid turned designs for double or single seated valves and in wide variety of material.—MASON-NEILAN DIV.

409—Lubricated Plug Valves—Catalog PV-4 covers operational features. Quarter-turn to open or close; lubricant grooves provide positive seal when valve is closed; when open, seating surfaces not exposed.—THE WM. POWELL COMPANY.

417—Welding Fittings — 192 page Cat. 54 gives design data on piping and piping application including digests of specifications, working pressures, design formulas, etc. Covers welding fittings, prefabricated pipe, forged steel flanges, and pipe coils. — MIDWEST PIPING COMPANY, INC.

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See Pages 95-96

419—Small Gate Valve — Multiple applications of small forged steel gate valve noted in Catalog 10. Low maintenance. Sizes from ¼" to 2"; rising stem with yoke or rising stem with inside screw. Pressures from 380 psi at 1000 F to 2000 psi at 100 F. — THE CHAPMAN VALVE MFG. COMPANY.

425 — Steam Trap with only three parts — cap, disc and body described in Bulletin 257. No valve closing mechanisms. Only moving part is solid stainless steel disc. Same trap for all loads and pressures 10-600 psi. — SARCO COMPANY, INC.

427—Diaphragm Valves — Valves for common and corrosive services described in Circular AD-1942. Have independent seating and bonnet sealing. — CRANE CO.

448—Steam Trap Troubles—Booklet for plant engineering personnel "Banish Your Steam Trap Troubles." —YARNALL-WARING COMPANY.

456—High Alloy Castings & Pipe—Bulletin 3354G explains how static and centrifugal castings & pipe offer maximum resistance to heat and corrosion. — THE DURALOY COMPANY.

464—Pressure-Seal Valves—Circular 16 gives information on the wide range of sizes and types of pressure-seal valves which are available in Series 600, 900, 1500 and 2500. — WALWORTH.

470—Aluminum Jacketing — Applicable for protecting lines, tanks, towers, or vessels. Booklet shows simplified inexpensive applications in process industries, commercial buildings, etc. — ASEECO, INC.

471—Steel Pipe—⅛" thru 30" spiral weld, electric weld, butt weld, seamless, lap weld, and continuous pipe described in Catalog PL-9. Warehouse stocks in South & Southwest. — L. B. FOSTER CO.

479—Multiport Drainers — Publication 5201 containing 8 pages describes units for removing large quantities of condensate under vacuum or pressures, as from evaporators, heaters, separators, coils or steam lines (up to 200 psi maximum). Lists discharge capacities, shows features and typical installations. — COCHRANE CORPORATION.

492 — Pressure Reducing Valve — Bulletin D-92 shows how valve will minimize problems inherent in steam service. One pilot with three interchangeable springs provides range of from 2 to 150 psi.—FISHER GOVERNOR COMPANY.

MAINTENANCE PACKING GASKETS, LUBRICATION

506—Gage Glass Cleaning Tool — Data sheet No. 301 describes tool which uses brushes to quickly and efficiently clean inside of liquid level gage glass.—JERGUSON GAGE & VALVE CO.

510—Hard Surfacing—20 page digest TIS 2821 discusses wear and need for overlays for abrasion, corrosion, friction, heat and impact; case studies; check list of 15 characteristics overlay deposits should exhibit. — EUTECTIC WELDING ALLOYS CORP.

529—Valve Maintenance — Folder describes the Dexter power-driven, one-man operated valve-in-line reseater. Average grinding time 4 min. Grinding heads for all angles; sizes ¼" thru 12"—THE LEAVITT MACHINE COMPANY.

531 — Stack Maintenance — How wrought iron offers unique defense against flue gas corrosion described in bulletin "Wrought Iron

Bulletins (Cont'd)

for Flue Gas Conductors."—A. M. BYERS COMPANY.

533—Air Compressor Rod Packing—Catalog 56 shows how "Compressor" No. 760 stays flexible under intense dry heat and protects rods from premature wear. — THE BELMONT PACKING & RUBBER CO.

540—Welding Charts—Wall training charts TIS 2690 (Torch) and TIS 2689 (Metallic Arc) designed to fit into welding training programs. Correct welding procedures illustrated. — EUTECTIC WELDING ALLOYS CORPORATION.

545—Correct Lubrication — "Lubriplate Data Book" shows importance of providing and maintaining proper and economical maintenance of all types of plant machinery thru adequate lubrication. — FISKE BROTHERS REFINING CO.

560—Lint Removal—Lintoff G36, a liquid dispersant, described in folder. Removes lint from humidifiers and air washers; reduces cleaning costs; retards rust; kills slime. — INDUSTRIAL PRODUCTS CO.

564 — Anti-Corrosive Paints — Bulletin, "The Application of Subox and Subalox Paints" — Gives the story of a complete paint system for weather, moisture and alkali protection, with details as to application.—SUBOX, INC.

570 — Multi-Purpose Grease—Bulletins describe new single product Gulfcrown grease (4 consistencies) that does the work of many—simplifies application and avoids errors, reduces inventory & cuts lubrication costs; grease gun or centralized system application. — GULF OIL CORPORATION.

590—Steam Line Treatment—Folder describes alkaline IPCO S-L-T. Used in boiler water it will volatilize and travel with steam to return lines. Prevents costly repairs and provides insurance against replacing pipe and fittings. — INDUSTRIAL PRODUCTS CO.

ENGINES, DRIVES POWER TRANSMISSION MATERIALS HANDLING

619—Automatic Coal Scales—Bulletin O352A covers Model H-39 (capacities up to 40 tons/hr) automatic coal scales. Coal never arches in feeder or weighing hopper—dust sealed; contact platework of stainless steel. — RICHARDSON SCALE COMPANY.

620—Roller Chains & Sprockets — 68 page Catalog 757 gives charts & tables on How to Select Roller Chain Drives, Speed Ratios for Sprocket Combinations· Horsepower Ratings & Lubrication Requirements. — DIAMOND CHAIN COMPANY.

629—Longer V-Belt Life — 12 page Bulletin 20X6234C describes various types of V-belts and tells how to select and match them. Lists seven steps for correct installation and hints for making them last longer. — ALLIS-CHALMERS MFG. CO.

630—Mechanical Vibrating Conveyors — Catalog 890 gives information on conveyability and density of typical solid materials and provides data on how to "Do It Yourself" to get required length.—JEFFREY MFG. CO.

631—Screw Conveyors—Catalog ID-541, 68 pages — Illustrates and describes standard and special types of conveyors, with engineering data necessary for selection. Tables give sizes, types, speeds, horsepowers and other information. Accessories included. — CONTINENTAL GIN COMPANY, INDUSTRIAL DIVISION.

632—Gearmotors & Package Drives —8 p booklet DB-3650 illustrates horizontal, vertical, right angle, open, enclosed, explosion-proof, a-c & d-c units with respective reduction ratios and output speeds. Speed range from 7.5 to 780 rpm. — WESTINGHOUSE ELECTRIC CORP.

648—Belt Fastening Tools — Bulletins F-110 and F-111 — Describe new Flexco power tool wrenches and power tool boring punches, designed to speed up fastening of wide conveyor belts; and give recommendations on the use of various impact tools connected therewith.—FLEXIBLE STEEL LACING CO.

656—Speed Reduction—Bulletin 191 outlines three styles of speed reduction — integral gear motors, speed reducers with separate motors, and speed reducers alone. Highlights all the important engineering advantages of Sterling drives and contains important information for consideration when selecting speed reducers. — STERLING ELECTRIC MOTORS, INC.

661—D-C Crane Control — 8 p Bulletin GEA-6434 features precision hoist, bridge and trolley control

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PACO PLASTIC makes the difference between an efficiently operated boiler and one that is constantly in need of repair! PACO PLASTIC forms a solid, joint-free monolithic wall that prevents heat and gas leakage. Quickly applied with unskilled labor and can be fired immediately! Free estimates at no obligation!

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J. L. Goodman & Son, Hickory, N. C.
Joe Moore & Company, Raleigh, N. C.
Summers Hdwe. & Supply Co., Johnson City, Tenn.
McBurney Stoker & Equip. Co., Atlanta, Ga.
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Applied Engineering Co., Orangeburg, S. C.

DEALERS IN MOST TOWNS AND CITIES

systems. — GENERAL ELECTRIC CO.

676—Variable Speed Motors—Bulletin No. 188 describes company's SpeedTrol Variable Speed Motors which assure optimum productivity regardless of manufacturing variables and which prevent obsolescence of machinery due to changes in processes or production volume. — STERLING ELECTRIC MOTORS.

691—Tug-Bar—Data sheet describes low-cost answer to load-handling in cramped areas. Weighs only 110 lb; handles loads up to 4,000 lb; motor driven wheels do the work. — WESTERN GEAR CORPORATION.

WATER TREATMENT, HEATING VENTILATING, AIR CONDITIONING REFRIGERATION, DUST & FUME CONTROL

702—Water Conditioning — Bulletin 611A, 20 pages—Gives comprehensive data on methods of conditioning water for boiler, process and general use, featuring zeolite water softeners of "double-check" design. Data on filters, purifiers, zeolites, ion-exchange resins, de-gasitors. — ELGIN SOFTENER CORPORATION.

706—Automatic Roof Cooling—Bulletin shows how automatic evaporative roof cooling can reduce inside temperature 8 to 15° without air conditioning; increase roof life; and reduce fire hazards. Many Southern installations. — APRIL SHOWERS—SOUTHERN.

USE READER SERVICE

See Service Cards

710—Scale Remover—Bulletin shows how Anco Scale Remover quickly eliminates scale in boilers, water lines, refrigeration and air conditioning systems.—ANDERSON CHEMICAL COMPANY.

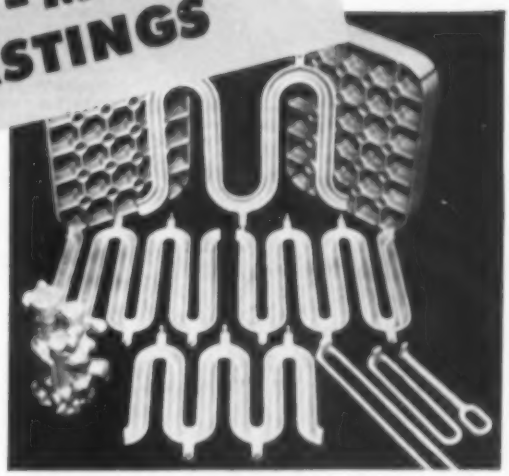
713—Electric Precipitators—26 page Bulletin 104 shows how units meet five engineering requirements —Positive control of gas flow; high, uniform electrode emission; Effective continuous cycle rapping; Simple, rugged construction; and Safe, trouble-free high voltage equipment. Gives 9 time-tested steps to a successful installation.—BUELL ENGINEERING COMPANY.

715 — Amine Treatment — Return line corrosion is a critical problem in maintaining economical, efficient power plant operation. Bulletin CP-100 shows how amine treatment is an easy, effective and economical way to eliminate pipe corrosion problems. — THE BIRD ARCHER COMPANY.

Announcing

a significant broadening of
Duraloy High Alloy Casting Service...

SHELL-MOLDED CASTINGS



DURALOY

We are now in position to accept and process substantial orders for shell-molded castings in the Chrome Iron, Chrome Nickel class.

Shell-molded castings provide several values over conventional castings:

a . . . dimensions are exceptionally accurate
b . . . thinner walls are practicable
c . . . surface finish is superior

Shell-molding is ideal for mass or repetitive production of parts particularly those with intricate design.

With our conventional static and centrifugal casting service now broadened by our shell-molded casting service, we are in a better position than ever to serve industry in connection with its high alloy casting requirements. May we quote on your casting requirements that call for shell-molding?

The DURALOY Company

OFFICE AND PLANT: Scottdale, Pa.

EASTERN OFFICE: 12 East 41st Street, New York 17, N. Y.
ATLANTA OFFICE: 76—4th Street, N.W.
CHICAGO OFFICE: 332 South Michigan Avenue
DETROIT OFFICE: 23906 Woodward Avenue, Pleasant Ridge, Mich.

Write or call our ATLANTA OFFICE: 76 4th Street, N.W.

Bulletins (Cont'd)

716 — Dust Collection — Whether nuisance elimination or process material recovery check on Whirlex Dust Collector Units. Engineering data available. — THE FLY ASH ARRESTOR CORP.

721—What Type Collector?—Reprint 102 discusses control of industrial dusts and flyash and features P-D Collector Systems.—THE THERMIX CORPORATION.

731—Film Type Exchangers—Bulletin HE-7 describes typical installations. Units can be cleaned while in operation. Serve as jacket water coolers, feedwater heaters, sulphuric acid coolers, etc., and can be designed to cool or heat any liquid and to condense or evaporate any fluid. — HENRY VOGT MACHINE CO.

733 — De-Ionization — Reprint on "Counterflow Regeneration" a new method of ion-exchange, which combines chemical advantage of upflow with proven mechanical advantage of downflow. — ILLINOIS WATER TREATMENT COMPANY.

775—Fan Utility Sets — 52 p Bulletin 8314 covers fan wheels and motors — selection criteria, capacity tables & typical specifications. — AMERICAN BLOWER DIV.

784—Refrigeration Valves and Fittings—Catalog 0, 40 pages—Describes valves and fittings for ammonia, Freon and other refrigerants, for use in industrial refrigeration, ice making and air conditioning.—FRICK CO.

ELECTRICAL

802—Small Relays—Simple solenoid design with only one moving part described in Bulletin 700. Silver alloy contacts need no cleaning, filing, or other maintenance. — ALLEN-BRADLEY CO.

803—Shielded Electrification — Bulletin KS-1 describes "Kant Shock" for monorail and crane systems. Shielding prevents accidental contact with live bus bars. Eliminates all hazards of open bar conductors, prevents costly accidents, protects employees and reduces insurance rates.—AMERICAN MONORAIL CO.

811—Electric Heat — "100 Ways to Apply Electric Heat" gives a wealth of informative data on the use of electric heat in industry — fast, uniform, dependable, backed by nation-wide engineering service. — EDWIN L. WIEGAND CO.

816—"Bus Bar" Protecting Relay — Folder covers the TNS relay, which protects a transformer and its connected load of three-phase induction motors against outage or damage from either one or any combination of voltage unbalance, single-phasing, or motor overload, when motors are connected thru circuit breakers having under-voltage trip. — ESCO MANUFACTURING COMPANY.

835—Motor Starters & Contractors—12 p bulletin 14B8615 describes sizes 4, 5 & 6 (Type 425), 50 to 400 hp. Contactors incorporate arc centering blowout, which eliminates need for conventional blowout coils. — ALLIS-CHALMERS MFG. CO.

838—Electric Motors — 12 p brochure gives motor applications and factors in standard motor selection. Company's complete standard motor line described. — STERLING ELECTRIC MOTORS, INC.

KEEP UP-TO-DATE
USE SPI
READER SERVICE

See Service Cards

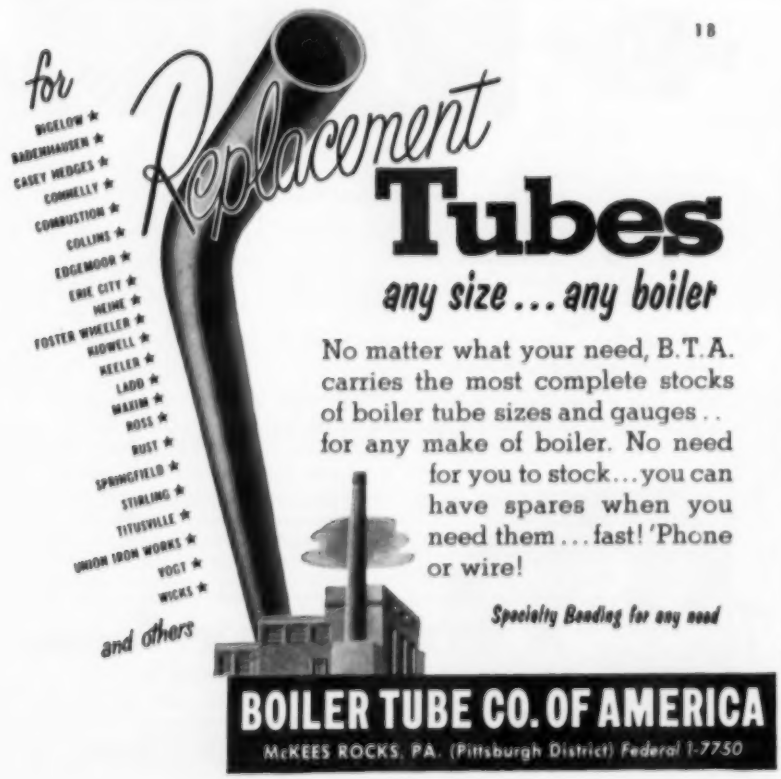
Pages 95-96

842—Circuit Protection — Bulletin FIS describes the maintenance free Fusetron fuses which protect motors, solenoids, coils and transformers against burnout, and which increase production by eliminating needless blows.—BUSSMANN MFG. CO.

860—Capacitors — Correct power factor at the load. Bulletin PF-1150 describes self-contained capacitors in sizes from ½ to 15 kvar. No additional switches or fuses required. — SPRAGUE ELECTRIC COMPANY.

869—Heaters & Devices — 72 page Bulletin BEC-1005H includes information on re-designed cartridge heaters, miniature soldering irons, aluminized steel sheath strip heaters, and new ratings and configurations of finned tubular heaters. Describes ceramic-to-metal and plastic resin hermetic seals. Also contains power requirements section.—GENERAL ELECTRIC CO.

879—Commutator Maintenance — 27 page booklet B-6150-A contains information on brush and commutator maintenance. Includes maintenance requirements, factors affecting commutation and carbon brush materials. — WESTINGHOUSE ELECTRIC CORP.



FUTURE EVENTS
of Engineering Interest

Sept. 9-23; 12th Annual Instrument-Automation Conference & Exhibit, Instrument Society of America, Cleveland Auditorium, Cleveland, Ohio. Jim Irving, Chairman, Publicity Committee, Room 3120, 20 No. Wacker Drive, Chicago 6, Ill.

Sept. 9-13; Illuminating Engineering Society, National Technical Conference, Biltmore Hotel, Atlanta, Ga.

Sept. 19-20; Southeastern Electric Exchange, Engineering & Operating Section, Biltmore Hotel, Atlanta, Ga.

Sept. 20-21; 39th Annual Meeting, Public Utilities Association of the Virginias, Greenbrier Hotel, **White Sulphur Springs, W. Va.** R. W. McKinnon, Exec. Secy., PUA of the Virginias, 5 Franklin Rd., Roanoke, Va.

Sept. 22-25; Petroleum - Mechanical Engineering Conference, ASME, Hotel Mayo, **Tulsa, Oklahoma.**

Oct. 1-4; National Association of Corrosion Engineers, South Central Regional Meeting, Oklahoma City, Okla.

Oct. 7-9; 13th Annual National Electronics Conference and Exhibit, Hotel Sherman, Chicago, Ill. Conference headquarters at 84 East Randolph St., Chicago 1, Ill.

Oct. 7-11; American Institute of Electrical Engineers, Fall General Meeting, Chicago, Ill.

Oct. 16-18; Southeastern Electric Exchange, Sales Conference, Tutwiler Hotel, Birmingham, Ala.

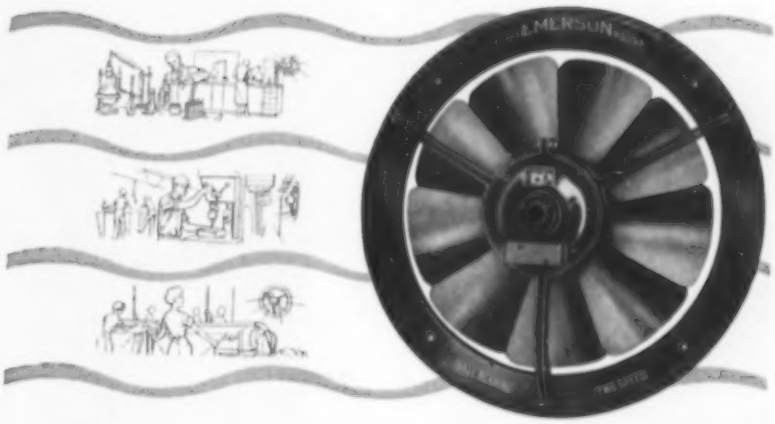
Oct. 21-25; 45th National Safety Congress & Exposition, Chicago, Ill. R. L. Forney, Gen. Secy., 425 N. Michigan Ave., Chicago 11, Ill.

Oct. 25; Southern Regional Meeting, Natural Gasoline Association of America, Washington-Youree & Captain Shreve Hotels, **Shreveport, La.** William F. Lowe, Secy., NGAA, 421 Kennedy Bldg., Tulsa 3, Okla.

Oct. 28-30; 10th Annual Power Distribution Conference, University of Texas, Austin, Texas.

Nov. 4-8; 39th Annual National Metal Exposition & Congress, American Society for Metals, International Amphitheatre, Chicago, Ill. W. H. Eisenman, Secy., ASM, 7301 Euclid Ave., Cleveland 3, Ohio.

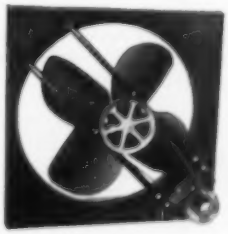
EMERSON-ELECTRIC
Exhaust Fans
put new life in lazy air!



Reduce fatigue...keep personnel alert and efficient by removing excessive heat, steam, dust and odors!

These EMERSON-ELECTRIC exhaust fans actually cut down your labor costs by helping to keep personnel working at top efficiency. Heat, dust, odors and steam are removed from plants and laboratories . . . reducing fatigue and making work more pleasant.

EMERSON-ELECTRIC Direct-Drive ball-bearing Exhaust Fans have fully enclosed motors . . . self-cooling for continuous operation. Available in 12" single-speed and 16", 18", 24" and 30" two-speed models, capacities up to 6700 C.F.M. Three other models, 12", 16" and 18" with sleeve-bearing motors, have automatic outside shutters attached. Write for Bulletin No. 2032 today! The Emerson Electric Mfg. Co., St. Louis 21, Mo.



EMERSON-ELECTRIC
Belt-Drive, Ball-Bearing Exhaust Fans

Move large volumes of air quietly and economically. Deep-pitched balanced blades are driven by powerful Emerson-Electric lifetime motors. Five sizes—24" to 48"

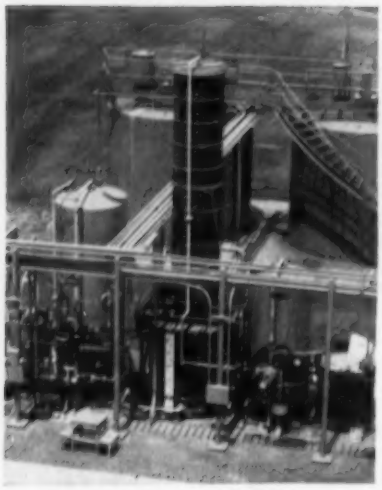
Low Initial Cost!
Low Operating Cost!

EMERSON-ELECTRIC

OF ST. LOUIS Since 1890

ILLCO-WAY

ionXchange



"SILICA: 0.003 PPM, OTHER SOLIDS UNMEASURABLE..."

With some doubt as to the outcome, the de-ionization units pictured above were installed outdoors at a Texas power and light company, to replace evaporation equipment as a means of purifying feed water for a high-pressure boiler. After three years, results far exceeded guarantee and expectations. From raw water containing 27 ppm of silica and dissolved solids totaling 365 ppm, the quality of the effluent is reported as: "Silica, zero to 0.005 ppm, average 0.003 ppm. Other solids are unmeasurable."—This is a good example of what modern ILLCO-WAY ionXchange can accomplish.

BOILER FEED WATER FOR POWER PLANT

The particular plant shown above consists of a cation exchanger, an aerator, and a mixed-bed deionizer. The large tanks in the background hold a supply of regenerants. Operation is manual throughout, a preference of the purchaser. *Results have proved even more economical than expected.*

ionXchange

ILLINOIS WATER TREATMENT CO.

ILLCO-WAY

840 CEDAR ST.
ROCKFORD,
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NEW YORK OFFICE: 141 E. 44th St., New York 17, N.Y.
CANADIAN DIST.: Pumps & Softeners, Ltd., London, Ont.

News for the South & Southwest (Continued)

Wrought Iron Pipe — Florida

REASON for the midget-like appearance of the welder is this 60 in. diameter wrought iron pipe shown being joined prior to use at the recently completed municipal power plant addition of the Orlando, Fla., Utilities Commission. This corrosion resistant pipe and a large quantity of 48 in. diameter piping circulate water to condensers at the power plant, where output requirements have increased from 25,000 to 65,000 kw in recent years.

Approximately 350 tons of wrought iron pipe and plate, produced by A. M. Byers Company, were used during expansion of plant facilities. In addition to this unusual size condenser piping, wrought iron was also employed in 6 ft diameter stacks that are more than 101 ft high and designed to withstand pressure as high as 25 lb/sq ft.

Wrought iron was also specified for heating supply, return and fuel lines, distilled and fresh water tanks, three condensate receiver tanks, two other type tanks and ducts as well as nipples and couplings.

Bristol—Houston

A new branch factory and repair laboratory for Bristol instruments, was recently opened in Houston, Texas. The new facility, at 3617 West Alabama, will be under the management of **E. A. Merwin**, Bristol's district manager in the Houston area since 1945.

L. J. Wing Now Division of Aero Supply Mfg. Co.

L. J. Wing Mfg. Co., Linden, N. J., producer of industrial ventilating combustion and heating equipment since 1879 has sold its assets to the Aero Supply Mfg. Co., Inc., of Corry, Pa. It will now be known as the L. J. Wing Mfg. Co. Division of Aero Supply Mfg. Co.

Chemstrand Promotions

A number of promotions designed to meet expanding functions of the Chemstrand Corporation's Engineering Division have been announced by **C. O. Hoyer**, Chemstrand vice president and director of engineering.

R. E. Wright has been named manager of the Major Projects Department of the Engineering Division at both Decatur and Pensacola. His office will remain at Pensacola.

Eugene Negro becomes manager of the Process and Planning Department with offices also at Pensacola. In the same department, **A. T. Bogen** has been made superintendent of the planning section and **George Malinoff** has been named superintendent of the process section.

At Decatur, **A. B. Terry** has been appointed Senior Supervising Engineer, reporting administratively to Wright. He will be in charge of Acrilan activities.

W. H. Washington also has been named a Senior Supervising Engineer to head the Engineering Development Department.

Hoyer said assignments which remain unchanged include **R. B. Newhouse**, in charge of design at Pensacola; **S. P. Thomas**, in charge of nylon construction at Pensacola; and **John Cole**, in charge of construction at Decatur.

Chemstrand is expanding both its Acrilan acrylic fiber plant at Decatur, Alabama, and its nylon plant at Pensacola, Florida.

Automatic Switch—Md.

Sidney Dubinsky, sales representative of the **Automatic Switch Company**, has moved to 1605 Court Square Bldg., Baltimore 2, Maryland. He serves Maryland industrial plants on the specification, selection and application of solenoid valves and electromagnetic controls.

Panalarm Annunciator pinpoints process "off-normals"

In the process industries and among users of automatic machinery, trouble is minimized when it's caught early. That's the purpose of the Panalarm Annunciator System—a continuous monitor of your process.

One typical adaptation of the modular Panalarm system is engineered to differentiate between the first "off-normal" and subsequent "off-normals" caused by the first. This feature allows instantaneous recognition of the prime source of trouble in a "chain reaction."

Another adaptation is designed specifically for motor start-up and shutdown. It has also been successfully adapted for supervisory control, pump control and programming.

Your Panalarm sales engineer will be happy to make a survey of your requirements to determine whether a Panalarm system can aid productivity and safety in your process. For electrical and mechanical data on standard systems, request Catalog 100B on your letterhead.

PANALARM

Division of
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Panellit of Canada, Ltd., Toronto 14

Engineered Information Systems for Industry

Graphic Panels, Control Centers

Panalog Information Systems

Panellit Service Corporation

V-BELTING BY THE MILE!
Fasteners by ALLIGATOR

✓ Open-End V-Belting (in rolls) is now supplied by all major V-Belt manufacturers.

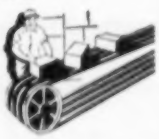
✓ Improved **ALLIGATOR V-BELT FASTENERS** are recommended by all manufacturers of Open-End V-Belting (in rolls).

Need a 23′—3½″ Long V-Belt?

. . . or one a mile long? Alligator Fastened V-Belts can be made up any length to fit any drive.

Convey with V-Belts?

With Alligator Fastened V-Belts you can make up conveyors any width, any length.



Got a shaft you want to go around?

Alligator Fastened V-Belts will do it. No need to dismantle anything.

Fixed centers—no means of take-up

Alligator Fasteners solve this problem!

The above represent but a few of "V-Belt Applications *Unlimited*" — do they give you any ideas?

Write for information.

Ask for Bulletin V-219

FLEXIBLE STEEL LACING CO.
4625 Lexington St. Chicago 44, Ill.

ALLIGATOR
V-BELT FASTENERS

News for the South & Southwest (Continued)

Yale & Towne—Cambar

To provide faster service to the expanding Southeastern industry, **The Cameron & Barkley Co.** has been made Master Parts Distributor for the **Yale & Towne Mfg. Co.'s** Materials Handling Division. According to R. C. Barkley, Cambar's president, the territory covered includes all of Florida east of Tallahassee, and eastern Georgia and South Carolina.

Fast service at factory prices will now be available to all stocking and non-stocking distributors as well as to consumers in the Cambar territory.

The central stock of these Yale & Towne parts will be located in Cambar's Jacksonville, Florida branch.

Dowell Reorganizes Districts

Dowell Incorporated has completed the reorganization of its three eastern United States districts according to A. C. Polk, General Manager at Tulsa. The area involved includes all of the states east of the Mississippi River except Michigan.

All of Dowell's industrial services east of the Mississippi River, except Florida, will now be handled from the Ceveland district office. Florida industrial chemical services and sales activities will be supervised by Dowell's Houston office.

The Cleveland district office will continue to be under the supervision of **E. C. Hardy. I. R. Bielek** has been transferred from St. Louis to be District Operations Manager at Cleveland.

Chicago Bridge & Iron

Fred L. Goldsby, Vice President and formerly General Sales Manager, has been appointed Assistant to the President, Chicago Bridge & Iron Company, Chicago, Illinois.

S. C. Hamilton, formerly District Sales Manager, Houston, Texas, has been made a Vice President and General Sales Manager of CB&I, with headquarters in Chicago.

K. W. Lange, formerly with the firm at the San Francisco Sales office, has been appointed Houston District Sales Manager.

De Laval — Holroyd Inc.

De Laval Steam Turbine Company and John Holroyd & Co., Ltd., of England, have announced a pooling of their engineering and manufacturing resources. De Laval Steam Turbine will market worm gear reducers manufactured by Holroyd in England, in addition to its own well-established line.

Charlotte Office for Combustion Control

Combustion Control Division, Electronics Corporation of America, Cambridge, Mass., has announced the establishment of a new Area Office in Charlotte, North Carolina.

R. E. Kittoe, formerly a Sales Engineer in Combustion Control's St. Louis office, has been appointed Area Manager of the new Charlotte office.

In his new post, Mr. Kittoe has been assigned the Southeast territory from Washington, D. C. to Florida, and will handle Combustion Control Division's complete line of Fireye flame safeguards, packaged control systems; smoke density indicators; valves; operating controls; and accessory products.

Westinghouse—Atlanta

Charles C. Smith, Jr. has been appointed area sales manager of **Westinghouse Electric Corp.'s** Atlanta sales office, replacing H. H. Gray, who has been assigned to the East Pittsburgh plant as assistant to the manager of industrial sales.

Pennsalt—Mexico Refractories

Mexico Refractories Co. of Texas has been named distributor of **Pennsalt Chemical Corp.'s** Corrosion Engineering products in Texas, southern Arkansas, and western Louisiana. Headed by General Manager **L. L. Brightman,** the company's main office and warehouses are located at 2211 Walker Avenue, Houston.

The company will carry local stocks of companion products, as well as protective coatings.

Devcon Distributors

Wesco Corporation, Charleston, West Virginia and **Tidewater Supply Co., Inc.,** Greensboro, N. C. are recently appointed distributors of "Plastic Steel" and other **Devcon Corporation** products to industrial plants for repairing and rebuilding machinery, making tools, jigs and molds, and general maintenance of plants and equipment.

Wyatt Metal Opens Mexico City Plant

Wyatt Metal & Boiler Works, Inc. has purchased the plant of Productos de Hierro y Acero, SA, a metal fabricating concern with headquarters in Mexico City.

T. J. Uhl, who was production manager at Wyatt's Dallas, Texas plant, has been named manager of the Mexican concern, which will be operated as a wholly owned subsidiary of Wyatt's.

The plant outside of the Mexican capital is equipped to do fabrication similar to that produced in the Houston and Dallas shops of the parent concern. These facilities are not capable of turning out the complicated fabricated products commonly manufactured in the Texas plants.

Okonite—Southeast

The Okonite Company has named **Ernest P. Clement** district manager of the **Birmingham** office, **Julian R. Hoss** district manager of the **Atlanta** office, and **Ernest C. Range** regional engineer for the electric wire and cable manufacturer's Southern region, stationed at Atlanta. These new appointees will report to Regional Sales Manager **Dewey A. White.**

Clement, who is a graduate of the Alabama Polytechnic Institute, has served in both the Birmingham and Houston sales office. Hoss has been a member of the Atlanta sales force for the past three years, prior to which he gained experience in the New Orleans and Birmingham sales territories. He was graduated from Georgia Institute of Technology. Range, formerly manager of the Atlanta office, has a service record of 23 years in Okonite's Southern region. Before this he had extensive engineering experience with the Tennessee Electric Power Company and the Commonwealth and Southern Company.

NIAGARA Aero HEAT EXCHANGER

WATER SAVING
with
Trouble-Free Cooling Equipment

● Cools your jacket water for engines or process equipment or electric apparatus. Your closed system keeps free from dirt or maintenance troubles. You can cool air, gases, chemicals, plating baths, quench baths, welding machines, extrusion and drawing machines and hydraulic presses. You get real precise temperatures, save rejections, lower production costs. Use NIAGARA AERO HEAT EXCHANGER cooling with atmospheric air...saves water, pumping, piping and power; quickly saves its costs.

Convenient Units Up To 30,000,000 BTU Capacity

Write for Bulletins No. 120, 124 and 132

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Niagara District Engineers in Principal Cities of U. S. and Canada

Clean, uniform, exact heat
to match the size
and shape of your
production equipment

CHROMALOX
Electric Strip Heaters

Quickly and easily bolt or clamp Chromalox Electric Strip Heaters to your platens, dies, kettles, tanks, pipes, ovens, air ducts, for the many advantages obtained only with electric heat.

Lengths 4" to 96" Widths ¼" to 2½"
Cross-section curving or lengthwise bending.
Ring Diameters 2½" to 11"
115, 208, 230, 480 Volts 35 to 5,000 Watts
Sheath Materials: rust resisting iron, high temperature chrome steel, Monel
Choice of convenient terminal placements.

FREE BULLETIN
Call your Chromalox Representative . . . or write today for Bulletin F1568.

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7563 Thomas Boulevard, Pittsburgh 8, Pa.

C-2108A

CHROMALOX
THE NAME IN ELECTRIC HEAT

News for the South & Southwest (Contd)

Cyclone Fence — Southeast

United States Steel's Cyclone Fence Department has opened its new central warehouse and sales office at 4646 Deere Drive in Chamblee, Georgia, it has been announced by W. R. Denton, Southeast District sales manager for Cyclone. The facility will offer the largest single stock of fencing materials in the Southeast.

Serving as headquarters for 14 sales offices, it will serve the five-state area of Georgia, Alabama, North Carolina, South Carolina and Florida, as well as East Tennessee.

Sales engineers **Carl T. Mathes** and **Foster E. Looney** will be assigned to the Atlanta sales office.

Rittelmeyer Representing Dorr-Oliver in Southeast

Dorr-Oliver, Incorporated of Stamford, Conn., has announced the appointment of **Rittelmeyer & Company** of Atlanta, Georgia, as exclusive distributor for chemical processing and industrial pumps for Georgia, Florida, Eastern Tennessee and portions of Alabama.

The Rittelmeyer organization, headed by **John M. Rittelmeyer,** has headquarters at 150 Nassau St., N. W., Atlanta. They will stock, market and service the Olivite, ODS, and Type "L" centrifugal pumps for the manufacturing and process industries of the Southeast.

W-K-M Expands Texas Operations With Modern Foundry Facilities

In late July ground breaking ceremonies were held to touch off full scale construction of the new **W-K-M** iron and steel foundry on a 78 acre site in **Richmond, Texas.** Production will be about 600 tons of steel castings and 400 tons of grey iron casting per month. Total employment will be approximately 500 with an estimated annual payroll of $2 million when full production is obtained.

The steel foundry operations will occupy about three acres of foundry space. W-K-M uses approximately 8 thousand tons of steel castings every year in the manufacture of W-K-M Gate Valves and Key Kast Alloy Steel Welding Fittings and Key Return Bends. W-K-M's need for steel castings runs from simple pipe welding fittings, which might weigh as little as 5 lb, up to giant castings for 34 in. pipeline valves, which weigh approximately 10,000 lb.

The steel foundry will produce steel by the electric furnace process, which provides the finest quality steel castings. Two three ton electric furnaces will be used to make carbon steel, and low and medium alloy steels, while a one-half ton electric furnace will be used for the production of high alloy steels.

W-K-M foundry men have carefully planned for the minimum manual handling of castings and materials. Forty cranes ranging from the small jib type to 15 and 30 ton overhead traveling cranes will be used. Molding sand will travel to and from the molding areas by an efficient system of conveyor belts.

The iron foundry will occupy some one and one-quarter acres of the building. Iron castings will be produced by utilizing two 45-ft high cupolas which are cylindrical furnaces used for melting the iron mix. Both cupolas will be equipped with the latest dust suppression equipment.

The cupolas are charged with steel scrap, iron, limestone, coke and fluxes. The molten iron flows from the cupolas into a two-ton electric furnace.

W-K-M uses iron castings in the manufacture of its lubricated plug valves, which range in size from ½ in. valves for water and gas service up to 30 in. valves for service in gas transmission and general industry.

The foundry will be operated by a foundry manager under the same overall direction as the manufacturing plant in Missouri City. The management staff consists of: **J. S. Downs,** President; **R. O. Wynn,** Vice President — Manufacturing; **B. J. Gross,** Vice President — Marketing; **O. Bliss Williams,** Director of Industrial and Public Relations; and **H. Ben Young,** Director of Engineering.

Water storage tank for the city of Atlanta, Georgia. This 500,000 gallon tank was fabricated by the J. J. FINNIGAN Company, Inc. from raw material to final erection 34' diameter, 75' high.

Build FINNIGAN *Quality..* *into your* TANKS

TANKS, PLATE WORK
PIPING, BREECHING
SMOKESTACKS
WATER HEATERS
BOILERS

From small utility tanks to giants, like the one above designed to your specifications, FINNIGAN craftsmanship assures you that your tank will be quality built to your specification and requirement.

Whatever your need it will pay you to buy FINNIGAN quality. Call, write or wire today

J. J. FINNIGAN CO. INC.
722 MARIETTA ST., N.W., ATLANTA

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3714 14th ST., N. W., WASHINGTON, D. C.
4054 THALIA AVE., NEW ORLEANS 25, LA.
230 NORTH TORRENCE ST., CHARLOTTE, N. C.
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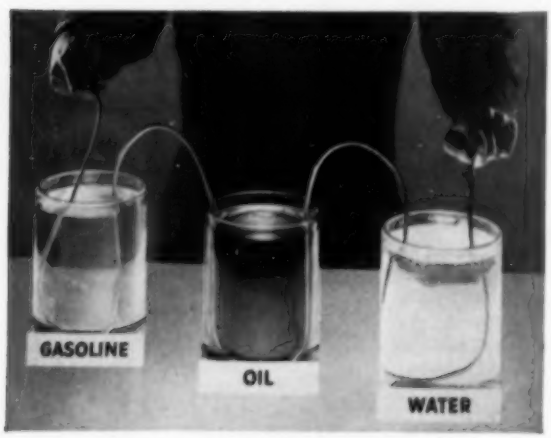

NEW WIRE RESISTS ALL 3

This is Anaconda's new Dentrol wire—approved by Underwriters' Laboratories for direct exposure to gasoline and oil. Made with a clear nylon jacket overall, Dentrol affords new safety wherever wiring is exposed to gasoline or oil—new economy over lead-covered cable used up to now in these areas. Recommended for 600 volt wiring for lighting and control in and around refineries, tank farms, service stations, and industrial plants where TW wire may be used and is exposed to gasoline and oil. Write for full information to: Anaconda Wire & Cable Co., 25 Broadway, New York 4, N. Y.

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TO PURCHASING AGENTS ONLY!

FREE! Your Choice...
Evans KING SIZE 10-ft. White-Tape
(EXTRA-WIDE BLADE)
or Evans Pocket 12-ft. White-Tape
(REGULAR ½" WIDE BLADE)

Attention Purchasing Agents:

We make this startling offer to introduce your company to Evans' superior King-Size and Pocket White-Tapes, the finest measuring tapes manufactured.

Simply fill in the coupon below and we'll send you, absolutely free and without any obligation, your choice of either our King-Size 10-ft. ($2.39 retail) or Pocket 12-ft. White-Tape ($1.89 retail)! (Offer limited to one tape per purchasing agent.)

We feel that once you try Evans Tapes, you'll never buy another brand. Here's why:

EVANS KING-SIZE
10-ft. ¾" Wide Steel Tape
Stands Up Straight for Easy One-Man Measurements.

The 33⅓% wider blade (full ¾") stays straight up—will not bend when making measurements. Chrome plated zinc die-cast case. Free belt clip for handy carrying and Free Tenite Utility Case. Self-adjusting sliding hook for accurate inside-outside measuring.

Also available in 6, 8, 12-ft. lengths.

All EVANS Tapes are marked so your men don't have to figure!

EVANS 12-ft. Pocket WHITE-TAPE

Measures a full 12 feet—eliminates adding two measurements as with shorter tapes. Regular ½" wide blade. Chrome plated zinc die-cast case. Self-adjusting sliding hook for 100% accurate inside or outside measurements. Free transparent Tenite Utility Case.

Also available in 6, 8, and 10-ft. lengths.

Evans RULE CO., Dept. 180, Elizabeth, N.J.

Please send me free sample of (check one)

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☐ Send catalog page on Evans Tapes with custom name-plates for gifts to our customers carrying our advertising message.

My two sources of supply for steel tapes are:

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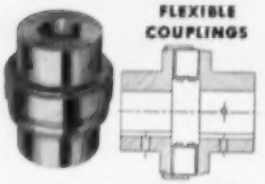
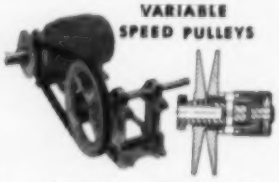


REQUEST BULLETIN C56

Bores (max.).....⅛" to 9½"
O.D. .....⅝" to 21½"
Wt. .....½ oz. to 1500 lb.
H.P. .....1/20 to 3000
Torque (static).1½ to 5100 ft.-lbs.

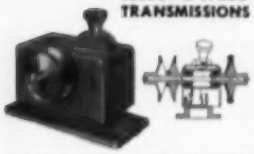
VARIABLE SPEED PULLEYS



REQUEST BULLETIN 118

Bores (max.).....½" to 1⅝"
O.D. .....3" to 13⅜"
Belt Sizes.....A to 2¾ TW
Speed Ratios.....1-1 to 8-1
H.P. (1750 rpm.).....¼ to 15

SELECT-O-SPEED TRANSMISSIONS



REQUEST BULLETIN 118

Controls.....Lever or Hand Wheel
Belt Sizes.....A to C
Speed Ratios.....1-1 to 10-1
H.P. (1750 rpm.).....½ to 7½

UNIVERSAL JOINTS

REQUEST BULLETIN 820

Bores.....⅛" to 2"
Hub Dia. .....½" to 4"
Static Torque 340 to 130700 in.-lbs.
H.P. (100 rpm.).....½ to 207

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Tampa—3313 W. Sevilla Circle
MISSOURI: St. Louis—7530 Forsyth Blvd.
Kansas City—1733 Main Street
TEXAS: Houston—1200 Jackson Street
VIRGINIA: Richmond—304 E. Main Street
GEORGIA, NORTH CAROLINA, SOUTH CAROLINA: Greenville, South Carolina—P. O. B. 3175

LOVEJOY FLEXIBLE COUPLING CO.
4811 WEST LAKE STREET • CHICAGO 44, ILL.

News for the South & Southwest (Contd)

W. O. Widener & T. G. Cocks

Nalco—Southeast

W. O. Widener, Southeastern District Manager for National Aluminate Corporation's Industrial Division, recently retired.

A resident of St. Simon's Island, Georgia, he had represented the firm for twenty years in the sale and service of its water treatments, fuel treatments and other chemicals to paper, textile, steel mills; other manufacturing industries; municipalities and institutions. Under his guidance, the district progressed from a one to nine man organization, and into one of Nalco's largest, most productive sales territories.

Widener is succeeded by **T. G. Cocks,** formerly Manager of the company's St. Louis District. Cocks will make his headquarters at **Jacksonville, Florida.**

Schutte & Koerting — Southwest

Leo Johns, P. O. Box 5348, Tulsa, Oklahoma, has been appointed Sales Representative for Oklahoma and sections of Arkansas and Texas by **Schutte and Koerting Company,** Cornwells Heights, Bucks County, Pennsylvania.

Mr. Johns will provide sales and engineering service in this area for all SK Products includng jet apparatus of all types, Rotameters and flow indicators, the SK line of valves, gear pumps, and heat transfer apparatus.

Pumps—Mechanical Seals for Low Temp. Service

The Byron Jackson Division, Borg-Warner Corporation, is engineering twenty-four pumps on a contract awarded by the Corps of Engineers, Jacksonville, Florida, for installation at the Patrick Air Force Missile Test Center located at **Cape Canaveral, Florida.**

Included in the order were twelve liquid oxygen transfer pumps designed to handle liquid gas at temperature minus 297 F and deliver 750 gpm against a total head of 360 ft. Four liquid oxygen topping pumps deliver 350 gpm against a total head of 120 ft under similar temperature conditions. These pumps have aluminum casings and stainless steel impellers. Of special interest is Byron Jackson's engineering accomplishment in designing mechanical seals for this extremely low temperature service.

Eight fuel transfer pumps complete the order. These fuel pumps are constructed entirely of stainless steel and deliver 1,000 gpm against a total head of 375 ft at atmospheric temperatures.

J. C. Riley Co. of Houston Has Conveyor Systems, Inc.

The J. C. Riley Company, Box 6705, Houston 5, Texas now represents **Conveyor Systems, Inc.,** of Chicago, in Texas and Louisiana, offering conveying systems and other special material handling equipment.

The company also represents The C. M. Kemp Mfg. Co. (dryers, inert and nitrogen generators, carburetors, and immersion melting equipment), Reading Crane & Hoist Corp. (overhead hand and electric hoists and cranes); Borden Metal Products (grating and safety steps) and White Foundry Co. (abrasive nosings).

Dravo Heating—Texas

Mechanical Equipment Company, 2001 Fourth Street, **Lubbock, Texas,** has been appointed distributor of Dravo heating equipment for a 76-county area in Texas. Mechanical Equipment Company will sell Dravo's complete line of oil and gas fired units. These include the Counterflo, Paraflo, and Gas-Fired suspended type heater models, covering a range of capacities from 40,000 to 2,000,000 Btu per hour output.

Reliance Elec. & Master Elec. Combine Companies

Reliance Electric & Engineering Company and Master Electric Company have combined. Master will be operated as the **Master Electric Div. of Reliance Electric & Engineering Company.** Reliance is a major producer of electric motors and electronically controlled drive systems. Master produces fractional type a-c and d-c motors, special gear motors and other special rotating electrical equipment for industrial application.

Pangborn—Birmingham

Ralph A. Petersen has been appointed manager of the new Birmingham, Alabama, district office of Pangborn Corporation, Hagerstown, Md., manufacturers of Roto-blast and dust control equipment.

Mr. Petersen recently joined the Pangborn Corporation as a sales engineer assigned to the home office in Hagerstown, Md. He now has the states of Alabama and Mississippi and Eastern Tennessee as his territory.

The new district office at 1731-C Valley Avenue will make possible personalized service in the selection of blast cleaning and dust control equipment for metal working, processing and other industries in the area.

Petersen has previously been associated with Marion Machine Foundry and Supply Company as chief industrial engineer and with the Lynchburg Foundry Company as senior industrial engineer.

Kennedy Valve Sales Reps.

Three new Southern appointments to the Sales Department of **Kennedy Valve Manufacturing Company** have been recently announced.

Gene Reinersman will headquarter in **Covington, Kentucky** with a sales territory of the States of Kentucky and southern Indiana. Reinersman was previously with Amstan Supply, division of American Radiator and Standard Sanitary Corporation as an industrial salesman, Cincinnati Metropolitan area.

W. F. Strickland, a University of Georgia graduate, will have his headquarters in **Decatur, Georgia.** He was previously sales manager of Wilson and Mankin of Atlanta, Georgia and will work in that area.

A. E. Hockaday will work out of **Dallas, Texas.** A graduate of Southern Methodist University, Hockaday has had sales experience with Conner Supply Company and Metal Goods Corporation in Dallas.

Allis-Chalmers Appointments

Lloyd C. Parker has been named a serviceman in the company's Southeast Region, which has its headquarters in Atlanta.

Patrick H. Reagan has been named a sales representative in the New Orleans district office.

A. M. Byers—Washington

A. M. Byers Company has announced the appointment of **William J. Kelly** as manager of the firm's Washington, D. C., division. Mr. Kelly has been with the Byers Company since 1939. He has worked out of the company's Washington, D. C., office for the past twelve years.

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PITTSBURGH, PA.
Right in the Heart of the Golden Triangle
400 outside rooms with bath. Large-screen television and radio at no extra charge in every room. Air conditioning. Finest dining room.
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Opposite Greater Pittsburgh Airport on Airport Parkway west. 56 air-conditioned rooms with large-screen television at no extra charge. Tile bath. Private phone. Restaurant facilities. Courtesy car to and from airport.
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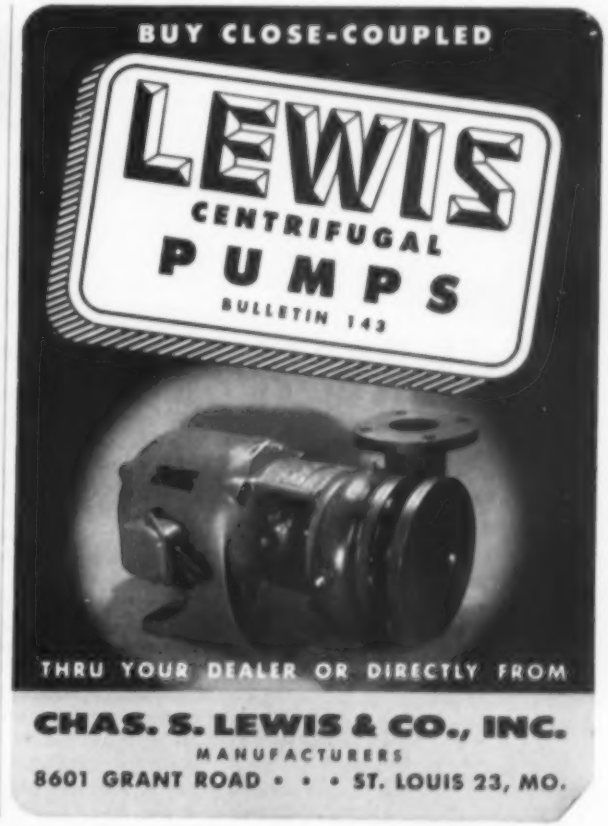
•Teletype Service. For immediate confirmation of reservations at no charge . . . telephone any Knott Hotel—or teletype PG-29.
KNOTT HOTELS



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New Plants & Expansions

South Atlantic

$2,000,000 sewage treatment plant planned for **Opa-Locka, Fla.** with 2 years being required for construction — $250,000 water plant expansion also scheduled . . . **Foremost Dairies** laying plants for $1,000,000 processing plant in **St. Petersburg, Fla.**

Underway is $300,000 expansion of strip-mining and processing operations of **Albany Limestone Co.** in **Albany, Ga.** . . . **Atlanta, Ga.** and **Georgia Power Co.** to construct $1,000,000 addition to dam at **Morgan Falls Reservoir** . . . **Southern Construction Co.** erecting $200,000 processing plant for asphalt road-surfacing materials in **Brunswick, Ga.** . . . Fall completion anticipated for $200,000 manufacturing plant for **Standard Container, Inc.** in **Homerville, Ga.** . . . $1,717,000 sewage system improvements underway for **Macon, Ga.** . . . 170 acre tract in **Perry, Ga.** to be site of $217,900 sewing plant for **Perry Mfg. Co.** . . . **Anaconda Wire & Cable Co.** planning multi-million dollar plant for the production of wire-cable products on 175 acre site in **Watkinsville, Ga.**

Esso Standard Oil Co. planning $1,545,000 building in **Charlotte, N. C.** . . . $54,000,000 dam project, requiring 3 years to build planned by **Duke Power Co.** for **Cowan's Ford, N. C.** — will include 3 power generators with an initial capacity of 262,500 kw with a fourth unit planned by 1968 to bring capacity to 350,000 kw . . . 38,000 sq ft of floor space to be contained in $200,000 wood laminating plant for **Unit Structures, Inc.** on a 10 acre tract in **Durham, N. C.** . . . $40,000,000 plant and research and development laboratory to be erected for **Allied Kennecott Titanium Corp.** on the Cape Fear River near **Wilmington, N. C.**

Erection of 2 dams at a cost of $7,000,000 being considered for **Crewe, Va.** by **Southside Electric Co-operative** . . . 22,000 sq ft, $300,000 plant to manufacture precision instruments planned by **Flight Research, Inc.** for **Richmond, Va.** . . . Fall construction anticipated for $1,000,000 factory warehouse of **Philip Morris, Inc.** in **Richmond, Va.**

Classified Advertisement

Classified rates are net, payable in advance, each month. Rates are based on column inch, with three columns per page, 10 inches per column, column width 2¼ inches — a total of 30 column inches per page.

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Widest range of sizes & specs in the U. S.
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MIDCONTINENT TUBE SERVICE, INC.
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$750,000 service building underway in **Clarksburg, W. Va.** for **National Carbon Co.** . . . **Union Carbide Corp.** to construct multi-million dollar chemical plant on 400 acre tract in **Winfield, W. Va.** which will be operated by Union Carbide Chemicals Co. — to be completed in 1960.

East South Central

Plans underway for $6,000,000 **Air Force Reserve Jet Base** in **Mobile, Ala.** . . . Winter completion anticipated for $500,000 plant of **OR Radio Industries, Inc.** in **Opelika, Ala.**

United Gas Corp. planning 10,000 sq ft office building in **Gulfport, Miss.** which will cost $238,700.

$280,000 factory addition to be erected in **Huntingdon, Tenn.** by **Henry I. Siegel Mfg. Co.** . . . $2,000,000 organic chemical plant planned for **Victor Chemical Works** in **Mt. Pleasant, Tenn.** . . . **Marquette Cement Mfg. Co.** expanding facilities of present plant in **Nashville, Tenn.** at a cost of $2,500,000 . . . Dacron manufacturing plant planned for **E. I. du Pont de Nemours Co.** in **Old Hickory, Tenn.**, costing between $1,250,000 and $1,500,000.

West South Central

$400,000 concrete aggregate plant being erected on 450 acre tract in **England, Ark.** . . . December operation anticipated for $2,500,000 manufacturing plant for **Standard Register Co.** in **Fayetteville, Ark.** . . . **Arkansas Cement Corp.** erecting $15,000,000 plant in **Foreman, Ark.** . . . Plans to be completed in Sept. for $2,266,000 sewage treatment plant for **Little Rock, Ark.** . . . **General Chemical Div. of Allied Chemical & Dye Corp.** has purchased 10 acres of land in **Pine Bluff, Ark.** for a $300,000 industrial chemicals plant . . . $500,000 poultry processing plant underway in **Springdale, Ark.** for **Edward Aaron Processing Co.**

International Lubricants Corp. to erect 19,000 sq ft office and laboratory in **Jefferson Parish, La.** at a cost of $450,000 . . . $1,000,000 office building containing 23,000 sq ft to be erected for **Louisiana Power & Light Co.** in **West Monroe, La.**

$1,500,000 gas manufacturing plant underway for **Anchor Gas Corp.** in **Krotz Springs, Okla.** . . . **Western Electric Co.** to lease $752,600 pilot plant in **Oklahoma City, Okla.** which is being erected by **Oklahoma Industries** . . . $1,000,000 office addition planned for **Oklahoma Gas & Electric Co.** in **Oklahoma City, Okla.**

United States Chemical Milling Corp. to erect $1,500,000 plant in **Arlington, Tex.** . . . $1,000,000 precision instrument plant to be erected by **Industrial Instrument Corp.** in **Austin, Tex.** . . . Early 1959 operation anticipated for $12,000,000 addition to Lon C. Hill Power Station of **Central Power & Light Co.** in **Corpus Christi, Tex.** . . . $1,500,000 sulphuric acid plant and $1,000,000 aromatic extraction unit being added to **Shamrock Oil & Gas Corp.** at **Dumas, Tex.** . . . $12,000,000 plant to be constructed on **El Paso, Tex.** 145 acre tract for **El Paso Electric Co.** with completion anticipated in 1960 . . . **Maxwell House Div. of General Foods Corp.** to expand in **Houston, Tex.** at a cost of $6,000,000 . . . Being erected in **Houston, Tex.** is $250,000 steel fabrication plant for **United Fabricating Co.**

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of high tensile bronze exceeding 60,000 lbs. tensile strength. Tough to withstand excessive stresses. Hard to assure long wear. Large in diameter, with extra length of threads. Head is crowned for friction-free bearing on plug.
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Plug Type Armor Seat
Bronze Globe Valve

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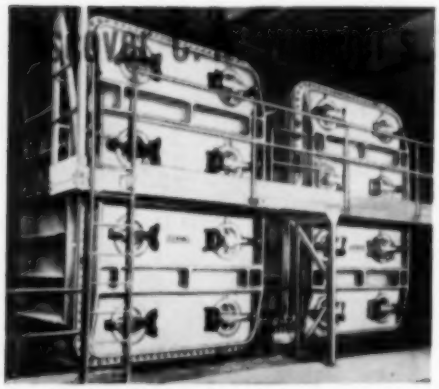
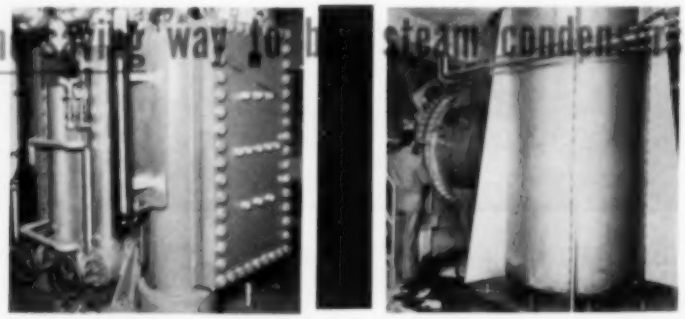


We often save clients up to 4 months' time by sending Wheeler engineers to work "on the board" at clients' offices, instead of mailing drawings for approval. Above is a typical installation—a 105,000 sq. ft. Dual Bank Divided Water Box Unit, installed at a New York station.* It condenses 950,000 lbs. steam/hr.



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